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[REDACTED] New York [REDACTED]

CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 91-14

FLEET - 1992 PLYMOUTH ACCLAIM

LOCATION - [REDACTED]

ACCIDENT DATE - [REDACTED] 1991

Contract No. DTNH22-87-C-27169

Prepared for:

U.S. Department of Transportation  
National Highway Traffic Safety Administration  
Washington, D.C. 20590



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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the precrash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

# TECHNICAL REPORT STANDARD TITLE PAGE

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15. Supplementary Notes On-site investigation of an air bag deployment crash that involved a 1992 Plymouth Acclaim.					
16. Abstract <p>This on-site investigation focused on a severe head-on crash that involved a 1992 Plymouth Acclaim (air bag equipped) and a 1980 Mercury Zephyr station wagon. The vehicles were traveling in opposite directions on a rural 2 lane roadway in a 55 mph speed zone. The driver of the Mercury entered the Plymouth's lane of travel as she attempted a left turn at a 3-leg Y intersection.</p> <p>The vehicles impacted in a head-on configuration which resulted in velocity changes of 38.9 mph for the Plymouth and 35.0 mph for the Mercury. As a result of the crash, the Plymouth's driver air bag system deployed.</p> <p>The driver of the Plymouth was a 49 year old male, 75", 185 lbs. He was properly wearing the active 3-point lap and shoulder belt system. He initiated a forward trajectory in response to the 11 o'clock impact force and loaded the belt webbing and the deployed air bag. The driver compressed the bag against the steering wheel as his loading force was transmitted into the steering assembly. As a result, the wheel was deformed 3.5" forward and the energy absorbing steering column was compressed 2.5". His knees and lower legs impacted the lower instrument panel and knee bolster. As a result of his contacts, the driver sustained 4 fractured ribs (AIS-2), a fractured left patella (AIS-2), a ruptured tendon of the right knee (AIS-2), a fractured left wrist (AIS-2), 2 fractured right metacarpals (AIS-2), a facial contusion (AIS-1), and lower leg abrasions (AIS-1).</p> <p>The Mercury Zephyr was occupied by the 59 year old female driver and 3 child occupants in the outboard positions. All occupants were wearing the available restraint systems. The driver and left rear occupant sustained fatal injuries. The right front and right rear occupants sustained moderate (AIS-2) level internal injuries.</p>					
17. Key Words  Severe head-on impact sequence ΔV's of 38.9 mph and 35.0 mph Air bag deployment			18. Distribution Statement  General Public		
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# CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 91-14

FLEET - 1992 PLYMOUTH ACCLAIM  
LOCATION [REDACTED]

## SUMMARY

This crash occurred at a rural 3-leg Y intersection on [REDACTED] 1991, during daylight hours. The asphalt road surface was dry and level with a posted speed limit of 55 mph. The involved vehicles were a 1992 Plymouth Acclaim, that was equipped with a supplemental driver's air bag system, and a 1980 Mercury Zephyr station wagon. The Mercury Zephyr was traveling in a northerly direction on the two lane roadway at a witness estimated speed of 40-45 mph. The station wagon was in the middle of a group of northbound vehicles that approached the impending crash scene on a slight left curve. The Mercury Zephyr was occupied by a 59 year old female driver and three child passengers who were seated in the outboard positions.

The air bag equipped 1992 Plymouth Acclaim was traveling in a southerly direction on the two lane roadway at a computed speed of 58.4 mph. The 49 year old male driver was enroute to work and stated that he was the only southbound vehicle in the immediate area of the crash scene. As he approached the intersection, the driver of the Plymouth noted the Mercury Zephyr emerge from the line of northbound traffic into his lane of travel. The driver of the Mercury was attempting a left turn onto the intersecting roadway; however, based on the location of the impending impact, she was attempting to turn into the left (eastbound) lane of the intersecting road. The road intersected at a shallow angle of 27° for northbound traffic which allowed for a high speed left turn.

The driver of the Plymouth steered slightly in a clockwise direction and braked with full force to lock the front wheels of his vehicle. The Plymouth subsequently skidded a police reported distance of 62.2' in a tracking orientation to impact. (During our on-site investigation, which was conducted on [REDACTED] 12 and 13, 51.3' of skid marks were still visible on the road surface.)

The full frontal area of the Plymouth Acclaim impacted the frontal area of the Mercury Zephyr station wagon in the southbound lane at the mouth of the intersecting roadway. Impact speeds were computed by the damage and trajectory algorithm of the CRASHPC program at 44.9 mph for the Plymouth Acclaim and 32.1 mph for the Mercury Zephyr. Resultant directions of force were within the 11 o'clock sector for the Plymouth and 1 o'clock for vehicle #2. As a result of the head-on crash, the Plymouth Acclaim underwent a velocity change of 38.9 mph while vehicle #2 sustained a velocity change of 35.0 mph. The impact induced deceleration deployed the Plymouth's driver air bag system.

The Plymouth Acclaim sustained 32.0" of front bumper crush located 2.25" left of center. Crush values at bumper level were as follows:  $C_1=24.5"$ ,  $C_2=29.5"$ ,  $C_3=31.0"$ ,  $C_4=28.0"$ ,  $C_5=23.625"$ ,  $C_6=16.9"$ . The impact reduced the wheelbases by 4.9" on the left and 7.3" on the right side. Vehicle #2 sustained 33.6" of

## SUMMARY (CONT'D.)

frontal crush located at the right bumper corner. Crush values at bumper level were as follows:  $C_1=11.6"$ ,  $C_2=19.2"$ ,  $C_3=26.1"$ ,  $C_4=24.0"$ ,  $C_5=27.4"$ ,  $C_6=33.625"$ . The Mercury's wheelbases were reduced by 6.9" on the left side and 10.25" on the right side.

The Plymouth Acclaim was displaced laterally to its right as it came to rest near the point of impact. The Mercury Zephyr was rotated approximately  $37^\circ$  in a counterclockwise direction and displaced 8' south (rearward) of the point of impact. At rest, the Mercury was nearly perpendicular to the roadway.

The driver of the Plymouth Acclaim was a 49 year old male who was 75" tall, with a weight of 185 lbs. He was in a normal seated position with the driver's seat adjusted to the full rearward position. The driver was properly wearing the active 3-point lap and shoulder belt system. Belt usage was supported by loading evidence found on webbing and system hardware. The driver attempted to brace against the steering wheel with both hands as he initiated a forward trajectory in response to the severe head-on crash. He loaded the active belt webbing with sufficient force to produce a 3" diagonally orientated black plastic transfer on the shoulder belt webbing from the B-pillar mounted D-ring. The lap belt webbing abraded the plastic extrusion at the outboard side of the seat cushion/seat back juncture. The driver subsequently loaded the deployed air bag and compressed the bag against the steering wheel. His loading force was transmitted into the steering assembly which deformed the wheel rim 3.5" and compressed the energy absorbing column 2.5" (shear capsule separation). As a result of his engagement with the active belt webbing and the steering assembly, the driver sustained 4 fractured ribs (AIS-2), 3 on the left side and 1 on the right. His face contacted the upper surface of the deployed air bag which displaced his sunglasses against his face. As a result, the driver sustained a contusion around his left eye (AIS-1).

The driver's hands separated from the wheel rim and subsequently impacted the upper instrument panel. His left hand scuffed the upper panel 16.5-18.5" left of center and compressed the energy absorbing material. The contact resulted in a fracture of his left wrist (AIS-2). Although the right hand contact did not produce contact evidence, he sustained fractures of the right 4th and 5th metacarpals (AIS-2). The driver's left knee impacted the left mid instrument panel 20-23" left of center. The contact fractured his left patella (AIS-2) and cracked the plastic panel. His left lower leg contacted the knee bolster which produced blue fabric transfers to the component and abrasions (AIS-1) to the anterior aspect of his left leg. The driver's right knee impacted the right side of the knee bolster at the steering column position and at the right side of the bolster. Blue fabric transfers evidenced the contact area which resulted in a ruptured tendon (AIS-2) of his right knee.

Following the impact sequence, the driver of the Plymouth came to rest in an upright attitude behind the steering assembly. He unfastened the active restraint system and attempted to exit the left front door. Due to the severe frontal crush and induced deformation throughout the vehicle's structure, he was unable to open any of the four doors. A passing motorist was able to open the left rear door to allow the driver to exit the vehicle. He was subsequently transported by ambulance to a local hospital where he was admitted for 5 days for treatment of his injuries.

### SUMMARY (CONT'D.)

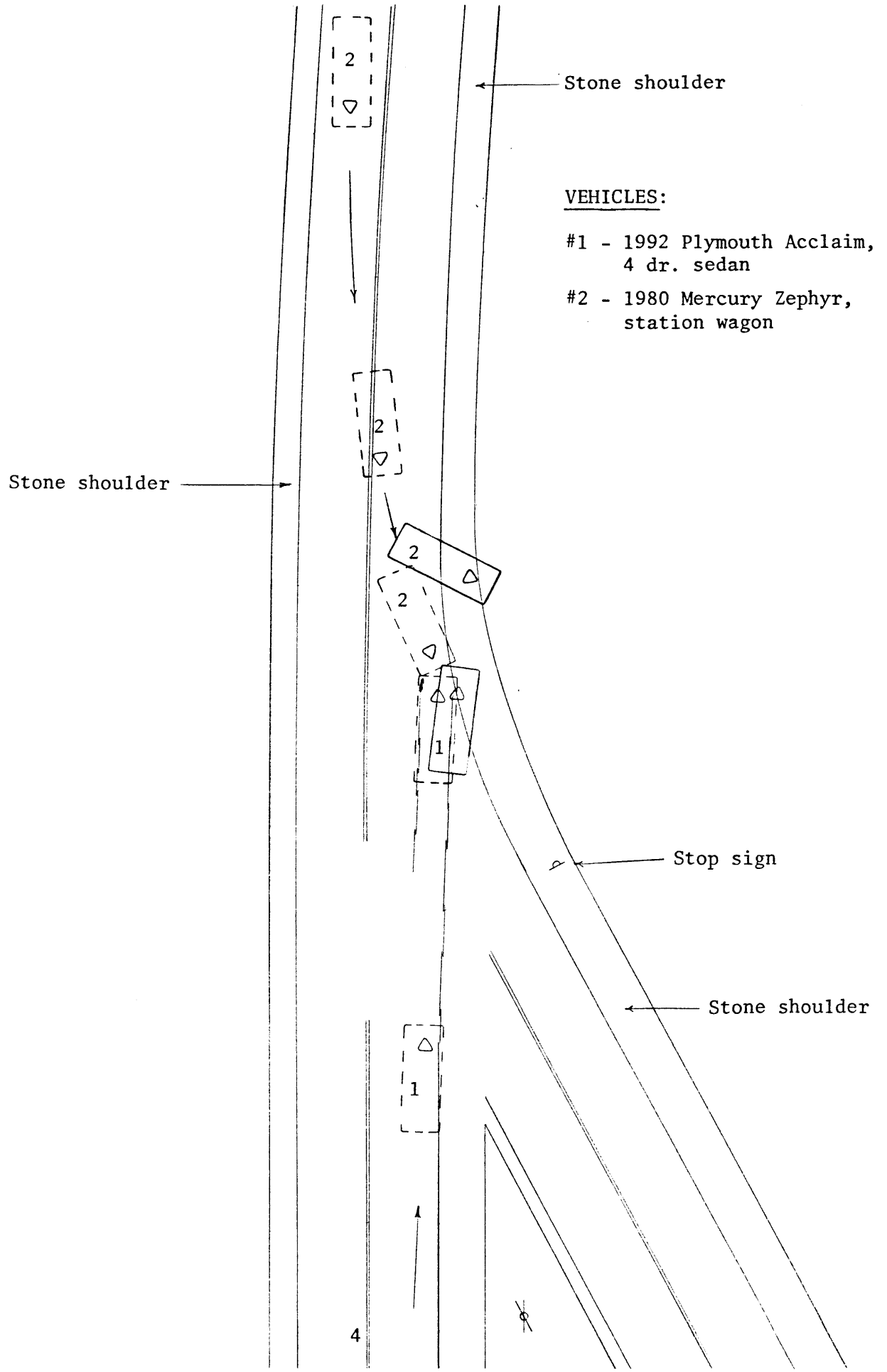
The driver of the 1980 Mercury Zephyr station wagon was wearing the active 3-point lap and shoulder belt; however, the shoulder belt was loosely adjusted across her torso (normal driving habit, per husband). At impact, she initiated a forward trajectory and loaded the active belt webbing which abraded the upper seatback and plastic extrusion at the seatback/seat cushion juncture. Her face impacted the steering wheel rim at the right upper spoke area. Tooth fragments were found embedded in the after-market steering wheel cover. The driver's knees contacted and fractured the lower instrument panel on each side of the steering column. The energy from the right knee loading was transmitted through the femur and into the right hip area. The investigating officer stated that she sustained an open fracture of the right hip area. The driver also sustained severe head and thoracic injuries and expired at the scene.

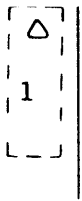
The right front occupant of the Mercury Zephyr was a 9 year old female who was fully restrained by the active 3-point lap and shoulder belt system. She initiated a forward trajectory in response to the frontal impact sequence and loaded the active belt system, which resulted in a ruptured spleen (AIS-2) and fractured ribs (AIS-2). Her right knee contacted the intruding glove box area of the vehicle. The contact fractured the plastic component and deformed the metal brackets to a depth of 1"; however, no injury occurred from the contact.

The left rear occupant was a 6 year old female who was reported as large for her age. She was wearing the 2-point lap belt and was holding a cardboard box which contained a pet rabbit. It was unknown if she was in a normal seated position or was in a forward position attending to the rabbit. She was thrust forward with respect to the decelerating vehicle at impact and loaded the lap belt which pitched her body forward at the waist. Her head possibly struck the right side of the upper seatback. The vinyl fabric was disrupted at this area and there appeared to be faint tissue transfers on the seam area. The occupant sustained a complete transection of the cervical spine (AIS-6) which resulted from either seatback contact (head hyperflexion) or hyperextension of the head from lap belt loading. She was transported to a local hospital where she expired on arrival.

The right rear occupant of the Mercury was a 4 year old female who was restrained by the lap belt (no child seat). She loaded the lap belt and sustained kidney contusions with hematuria (AIS-2). The occupant was transported to a local hospital where she was admitted for treatment of her injuries.

ACCIDENT SCHEMATIC  
CALSPAN CASE NO. 91-14

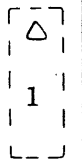




Grass  
traffic  
island

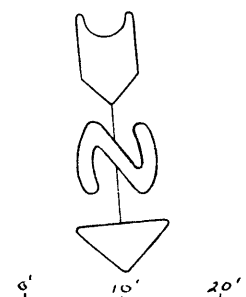
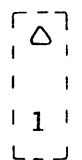
d

Stop sign



Stone shoulder

Stone shoulder



Scale 1" = 20'



CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 91-14

FLEET - 1992 PLYMOUTH ACCLAIM  
LOCATION - [REDACTED], VIRGINIA

ACCIDENT DATA

Location: Rural 3-leg Y intersection  
City/Township: [REDACTED]  
Area/Type: Rural/Residential  
Accident Date/Time: [REDACTED], 1991, daylight hours  
Investigating Police Agency: [REDACTED] Sheriff's Department  
Accident Type: Car/Car, head-on configuration  
Air Bag Vehicle Driver Injury Severity: Moderate (AIS-2)

AMBIENCE

Viewing Conditions: Daylight  
Weather: Clear  
Precipitation: None  
Road Surface: Dry  
Temperature: 27° F

HIGHWAY

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Type:	Secondary state route	Secondary state route
Number of Lanes:	2	2
Width:	20'4"	20'4"
Surface:	Asphalt	Asphalt
Median:	None	None

HIGHWAY (CONT'D.)

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Edge: East edge -	4'2" stone shoulder	4'2" stone shoulder
West edge -	3'9" stone shoulder	3'9" stone shoulder
Vertical Alignment:	Level	Level
Horizontal Alignment:	Straight	Slight left curve
Estimated Coefficient of Friction:	.75	.75
Traffic Density:	Light (northbound direction)	Moderate (southbound direction)

TRAFFIC CONTROLS

Signals:	None
Signs:	No pertinent signs
Markings:	Solid white edge lines, yellow full barrier center lines
Speed Limit:	55 mph

VEHICLES

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Description:	1992 Plymouth Acclaim LE, 4 dr. sedan	1980 Mercury Zephyr, 4 dr. station wagon
V.I.N.:	1P3XA46K2NF (production number deleted)	OK36B (production number deleted)
Color:	Black	Gray
Odometer:	685 miles	83,372.2 miles
Engine:	4 cylinder, 2.5 liter	6 cylinder
Transmission:	3-speed automatic, column mounted transmission selector lever	3-speed automatic, column mounted transmission selector lever
Steering:	Power assisted rack-and-pinion	Power rack-and-pinion
Brakes:	Power assisted front disc, rear drum brakes	Power front disc, rear drum brakes

VEHICLES (CONT'D.)

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Padding:	Upper and mid instrument panel, soft edged steering wheel rim and air bag module cover, sunvisors, fold-down center armrest, adjustable head restraints, door panels, door armrests	Upper instrument panel, sunvisors, fold-down center armrests, adjustable head restraints, door panels, door armrests
Active Restraints:	3-point lap and shoulder belts in the four outboard seated positions, center front and center rear lap belts	3-point lap and shoulder belts in the front outboard seated positions, center front lap belt, 3 rear seat lap belts
Automatic Restraints:	Driver's side air bag system which deployed at impact with vehicle #2	None
Defects:	None	None
Tow Status:	Towed due to damage	Towed due to damage

VEHICLE DAMAGE

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Exterior:	<p>The 1992 Plymouth Acclaim sustained severe frontal damage from its head-on impact sequence with vehicle #2. Maximum frontal crush was 32.0" located on the bumper face, 2.25" left of center. The lateral extent of direct contact damage was 50.5" which spanned the entire frontal plane of the vehicle. Crush values at bumper level were as follows: C<sub>1</sub>=24.5", C<sub>2</sub>=29.5", C<sub>3</sub>=31.0", C<sub>4</sub>=28.0", C<sub>5</sub>=23.625", C<sub>6</sub>=16.875".</p> <p>The impact buckled the hood at the designated fold points and displaced the hood slightly rearward. The hood latch separated and both hinge assemblies were deformed; however, the hinges remained intact. At maximum engagement, the left rear corner of the hood contacted and penetrated the lower left corner of the windshield. A 2.25" horizontal tear of the plastic laminate was noted to the contacted area.</p>	<p>The 1980 Mercury Zephyr station wagon sustained severe frontal crush from the 1 o'clock direction of force impact. The frontal structure of the vehicle was displaced both rearward and laterally to the vehicle's left. Maximum frontal crush was 33.625" located at the right corner of the bumper. Direct contact damage began 10" left of the vehicle's centerline and extended 42.75" to the right bumper corner. The combined induced and direct contact damage length was 60.75" which involved the full frontal width of the vehicle (bumper corner to bumper corner). Crush values at bumper level were as follows: C<sub>1</sub>=11.625", C<sub>2</sub>=19.2", C<sub>3</sub>=26.125", C<sub>4</sub>=24.0", C<sub>5</sub>=27.4", C<sub>6</sub>=33.625".</p>

VEHICLE DAMAGE (CONT'D.)

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Exterior (Cont'd.):	<p>The frontal damage compressed the unibody structure of the vehicle. The wheelbases were reduced by 4.875" on the left side and 7.3" on the right side. Remote buckling occurred to both sills with vertical displacement of the floor pan. Both right side doors remained closed during the impact sequence and were jammed as a result of vehicle deformation. The left side doors were initially difficult to open post-crash (per driver). However, at the time of our inspection, the left doors were fully operational. The left front door was distorted due to deformation of the left A-pillar.</p> <p>The windshield bond remained intact along all four sides of the glass. The glass was cracked from both hood contact and stress as the cowl area of the vehicle was displaced rearward. All door side glass and backlight glass were not damaged.</p>	<p>Lateral displacement of the front bumper was 11.25" at the left corner.</p> <p>Compression of the frontal area buckled the unibody structure upward at the base of the B-pillars. The left front door was jammed closed between the A- and B-pillars and was subsequently removed by rescue personnel with hydraulic equipment. The right front door was jammed closed; however, rescue personnel were able to force the door open. Both rear doors remained closed and operational post-crash.</p> <p>The wheelbases were reduced in length by 6.875" on the left side and 10.25" on the right.</p>
CDC:	11-FDEW-3	* 81-FDEW-4
	* Vehicle #2's 1 o'clock direction of force was incremented by a value of 80 to reflect the lateral displacement (shifting) of the frontal structure.	
Repair Cost:	Total loss	Total loss
Interior:	<p>The interior of the Plymouth Acclaim sustained moderate damage from exterior deformation and driver contact. Passenger compartment intrusion was minimal for the severity of the crash. Maximum intrusion involved 5.25" of rearward displacement of the left toe pan. The right toe pan was intruded 2.5" rearward. Compression of the frontal structure displaced the instrument panel approximately 1.5" rearward.</p>	<p>Vehicle #2's interior was damaged as a result of exterior deformation which produced intrusion of the instrument panel, floor, and toe pans. The occupants also contacted numerous components which resulted in additional damage. The driver's left knee contacted the fuse box cover area of the lower instrument panel. The contact fractured the</p>

## VEHICLE DAMAGE (CONT'D.)

### Air Bag Vehicle

Interior  
(Cont'd.):

The floor pan subsequently buckled upward to a maximum depth of 4" located under the left front seat. As a result of the floor pan deformation and the energy of the impact, the driver's seat was displaced vertically and rotated slightly in a counterclockwise direction.

The driver of the Plymouth Acclaim had properly used the active 3-point lap and shoulder belt system. At impact, he initiated a forward trajectory with respect to the vehicle and loaded the active belt webbing. His loading force against the shoulder belt pulled the webbing through the B-pillar mounted D-ring which produced a diagonal black plastic transfer on the webbing. The D-ring transfer was located 59-62" from the floor anchor point of the belt webbing. The driver's loading of the lap belt portion of the 3-point system produced abrasions to the plastic cover which housed the seat back recline mechanism. The horizontally orientated abrasions measured 4.75" in length and were located on the radius of the plastic cover. Abrasions were also observed to the plastic slide on the cinch bar of the system's latchplate. There was no evidence of belt stretching or damage to the webbing. On the outside surface (side away from driver) of the belt webbing, white fabric transfers were noted 42-44" above the floor anchor reference point. The white fabric transfers were probably a result of belt contact with the deployed driver's side air bag.

The driver's left knee impacted the left mid instrument panel adjacent to the rear defroster switch. The contact, which was located 20-23" left of center

### Vehicle #2

cover and the adjacent plastic panel 18-23" left of center and 10-14" below the upper instrument panel. Her right knee penetrated the lower plastic panel and engaged with the support brackets. The area of deformation was located 12-14" left of center and 12-15" below the horizontal reference axis.

Although restrained, her face and thoracic areas contacted the steering assembly. Tooth fragments were found embedded into the aftermarket steering wheel cover, above the right upper spoke. (At the time of our inspection, the wheel was rotated approximately 120° in a counterclockwise direction.) Her thoracic loading force against the steering wheel deformed the rim and spokes .75" forward. The extruder type steering column was also compressed 1.5".

The driver was belted; however, she was wearing the belt loose (normal driving habit, per husband). She loaded the shoulder belt webbing which abraded the upper side surface of the left front seat back. The triangular abrasion measured 2.5" horizontally x 2.5" vertically. A vinyl transfer was visible on the inside surface of the shoulder belt webbing 59-65.5" above the floor.

The lap belt abraded the plastic cover at the seat cushion/seat back juncture. Abrasions were also noted to the belt webbing 6.5-12" above the floor anchor point

## VEHICLE DAMAGE (CONT'D.)

### Air Bag Vehicle

Interior  
(Cont'd.):

and 8-10.25" below the upper panel, cracked the plastic panel and deposited blue fabric transfers to the struck component. Continuing down from the knee contact were additional blue fabric transfers that extended onto the knee bolster and fuse box cover. These transfers resulted from his lower left leg as it was thrust forward by the impact force. The lower leg transfers were 20.5-22.5" left of center and 11.75-18" below the upper instrument panel. The driver's right knee initially contacted the knee bolster protrusion for the steering column. A large blue fabric transfer was documented 8-10" left of center and 12-14.25" below the upper instrument panel. His knee was deflected to the right where it subsequently contacted and scuffed the upper right corner of the knee bolster (5.75-8" left and 11-15" down) and continued laterally into the side surface of the center instrument panel adjacent to the radio. The contact cracked the plastic panel and deposited blue fabric transfers 5" left of center and 10.5-15" below the upper panel. The driver's lower right leg scuffed and fractured the lower edge of the knee bolster 6.5-9" left and 17.5-20" down from the reference axis.

The driver attempted to brace against the steering wheel rim with both hands at impact. His left hand separated from the upper rim and subsequently impacted the upper instrument panel 16.5-18.5" left of center. The contact compressed the energy absorbing material and displaced the panel upward. His right hand probably struck the left side of the rear view mirror. Vertical scuffs were noted to the glass of the mirror and the assembly was rotated downward approximately 15°.

### Vehicle #2

that resulted from the plastic cover contact. Blood stains covered the majority of the exposed belt webbing.

The child right front occupant was properly restrained by the active 3-point lap and shoulder belt system. Her loading force against the belt webbing produced a similar abrasion to the right seat back surface. The belt webbing abrasion measured 1" vertically x 1.75" horizontally on the seat back. Vinyl transfers were noted to the webbing 45-47.5" above the floor anchor point of the continuous loop belt. Her right knee impacted the intruding glove box area which fractured the plastic door and deformed the underlying metal support bracket to a depth of 1". The contact was located 24-28" right of center and 14-17" below the upper panel.

Both rear seat occupants of vehicle #2 were wearing the available lap belts. Their loading force against the belt webbing fractured the outboard plastic retainer assemblies at the retractor side of the respective systems. There was no evidence of loading (i.e., belt stretching, etc.) on the belt webbing. Although the front seat assembly was displaced forward by the crash forces, an area of possible left rear passenger head contact was noted to the left seat back. Minute white transfers (possible tissue) and blood were noted to a compressed area at the upper right quadrant of the seat back.

## VEHICLE DAMAGE (CONT'D.)

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Interior (Cont'd.)	The driver's thoracic area loaded the deployed air bag and compressed the bag against the steering assembly. His loading force was transmitted through the bag which deformed the upper steering wheel rim 3.5" forward and compressed the energy absorbing steering column. Shear capsule separation was measured at 2.3" on the left bracket and 2.5" on the right side. There was no evidence of driver contact (i.e., tissue/fabric transfers) to the deployed air bag.	

## VEHICLE VELOCITY ESTIMATES

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Travel Speed:	58.4 mph	40-45 mph (witness estimates)
Impact Speed:	44.9 mph	32.1 mph
Total $\Delta V$ :	38.9 mph	35.0 mph
Longitudinal $\Delta V$ :	-38.3 mph	-33.1 mph
Lateral $\Delta V$ :	6.7 mph	-11.2 mph
Energy Absorption:	136544.7 ft.lbs.	148522.7 ft.lbs.

The above velocity estimates were computed by the damage and trajectory algorithm of the CRASHPC program. The air bag vehicle's initial travel speed was computed using the police reported skid distances. At the time of our on-site investigation, approximately 10 ft. of skid marks had lifted from the asphalt road surface.

## COLLISION SEQUENCE

Pre-Crash: The driver of the 1992 Plymouth Acclaim was en route to work and was traveling in a southerly direction on the rural two lane state route at a driver estimated speed of 55-60 mph. (A travel speed of 58.4 mph was computed using the CRASHPC results and the police reported skid distances.) The driver stated that his was the only southbound vehicle in the vicinity as he approached the 3-leg Y intersection. He did note a line of approximately twelve northbound vehicles approaching the intersection.

## COLLISION SEQUENCE (CONT'D.)

Pre-Crash (Cont'd.): Vehicle #2 was traveling within the group of northbound traffic at a witness estimated speed of 40-45 mph. As driver #2 approached the intersection, she initiated a clockwise steering input and entered the southbound travel lane prior to initiating a left turn onto the intersecting roadway. The Y-configuration intersection allowed for a high speed left turn within the 35-40 mph range.

The driver of the air bag equipped Plymouth Acclaim noted vehicle #2 as it entered his lane of travel; however, he stated that he did not detect the vehicle's left turn signal. He braked with sufficient force to lock the front wheels of his vehicle and possibly steered in a clockwise direction in an attempt to avoid impact. The Plymouth skidded in a tracking orientation a police documented distance of 62.2' to impact. (At the time of our on-site investigation, 51.3' of skid marks remained visible on the asphalt road surface.)

Based on the CRASHPC generated impact speeds, the driver of vehicle #2 probably braked prior to impact. There were no visible skid marks on the road surface from vehicle #2.

Crash: The Plymouth Acclaim and Mercury Zephyr impacted in a head-on configuration on the extreme right side of the southbound travel lane at the mouth of the intersection. Impact speeds were computed at 44.9 mph for the Plymouth and 32.1 mph for vehicle #2 by the damage and trajectory algorithm of the CRASHPC program. Resultant directions of force were within the 11 o'clock sector for the Plymouth and 1 o'clock for vehicle #2. Velocity changes were computed by the CRASHPC program at 38.9 mph for the Plymouth and 35.0 mph for the Mercury. As a result of the impact induced deceleration, the Plymouth's driver air bag system deployed. The driver stated that he noted a gray flash at impact which he later identified as the deployed air bag.

As the vehicles crushed to maximum engagement, the Plymouth was displaced laterally to its right before coming to rest near the point of impact. The momentum of the Plymouth Acclaim displaced vehicle #2 approximately 8 ft. rearward of its at impact position. The lateral component of vehicle #2's 1 o'clock impact force rotated the vehicle approximately 37° in a counterclockwise direction. The Mercury Zephyr came to rest with its center of gravity straddling the west edgeline of the southbound travel lane.

### Post-Crash:

Final Rest - The Plymouth Acclaim came to rest on the apron of the intersection with its right front tire resting approximately 6" outboard of the white edgeline. At rest, the vehicle was facing in a southerly direction.

Vehicle #2 came to rest straddling the white edgeline of the southbound travel lane. The vehicle was blocking the southbound travel lane and was facing in a northwesterly direction.



## COLLISION SEQUENCE (CONT'D.)

### Post-Crash (Cont'd.)

Driver  
Activities - The driver of the Plymouth Acclaim remained in his seated position and was conscious immediately following the crash. He noted steam rising from the front of his vehicle (radiator) and noted a faint gray dust within the vehicle. As he realized the severity of the crash, he unfastened the active belt system and attempted to exit the vehicle. The driver was unable to open the front doors of the vehicle. He immediately climbed into the rear seat area and was unable to open the rear doors. The driver subsequently laid on the rear seat cushion and attempted to kick open the left rear door. A witness opened the left rear door from the outside of the vehicle and assisted the driver from the vehicle. As he exited the Plymouth, the driver felt pain in his chest and lower extremities and realized at this point that he had been injured. He waited outside his vehicle for police and rescue personnel to arrive on-scene.

The driver of vehicle #2 was fatally injured and was removed from her vehicle by rescue personnel.

Police  
Activities - Numerous police units from the [REDACTED] Sheriff's Dept. responded to the crash scene to assist with traffic control and the investigation.

Rescue  
Personnel - Rescue personnel arrived on-scene and immediately assessed the severity of the injuries. They used hydraulic equipment to open and removed the left front door of vehicle #2. The driver was removed from the vehicle and was pronounced dead at the scene. The right front and left rear occupants of vehicle #2 were removed from the vehicle by rescue personnel and were transported to a local hospital. The right rear occupant of vehicle #2 was assisted from the vehicle by witnesses. She was also transported by ambulance to the same hospital for treatment.

The driver of the Plymouth Acclaim was transported by ambulance to the local hospital where he was admitted for 4 days for treatment of his injuries.

Scene  
Clearance - Both vehicles sustained severe damage from the crash and were towed from the scene.

## HUMAN FACTORS/OCCUPANT DATA

### Air Bag Vehicle

Driver:	49 year old male
Height:	75"
Weight:	185 lbs.
Active Restraint System Usage:	3-point lap and shoulder belt system
Usage Source:	Belt loading evidence, driver injuries, driver interview
Eyeglasses:	Prescription sunglasses, separated from face, lens separated from plastic frames
Vehicle Familiarity:	1 week
Route Familiarity:	Daily
Trip Plan:	En route to work
Manner of Leaving Scene:	Ambulance
Type of Medical Treatment:	Transported to a local hospital where he was admitted for treatment of his injuries

## DRIVER INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
4 fractured ribs, 3 on left, 1 on right side	Moderate (CBFS-2)	Shoulder belt webbing/steering assembly
Fractured left patella	Moderate (KLFS-2)	Mid instrument panel
Ruptured tendon of the right knee	Moderate (KRRM-2)	Knee bolster
Fractured left wrist	Moderate (WLFS-2)	Upper instrument panel
Fracture of the right 4th and 5th metacarpals	Moderate (WRFS-2, WRFS-2)	Steering wheel rim/upper instrument panel
Contusion around left eye	Minor (FLCO-1)	Eyeglasses/air bag
Abrasions of the anterior left leg	Minor (LLAI-1)	Knee bolster

## DRIVER KINEMATICS

The driver of the 1992 Plymouth Acclaim was in a normal, upright seated position at impact with both hands bracing against the steering wheel. He was properly wearing the active 3-point lap and shoulder belt system with his seat adjusted to the full rearward position. Restraint usage was confirmed by loading evidence found on the belt webbing and system hardware.

As a result of the severe frontal impact sequence, the Plymouth's driver air bag system deployed which provided the driver with additional restraint. He responded to the 11 o'clock impact force and initiated a forward trajectory with respect to the decelerated vehicle. His pelvic and thoracic areas loaded the continuous loop belt webbing which was locked by the inertia activated retractor. The driver's loading force pulled the shoulder belt webbing through the B-pillar mounted D-ring which produced a 3" diagonally orientated plastic transfer on the shoulder belt webbing. His pelvic loading on the lap belt webbing abraded the plastic cover at the outboard side of the seat back/seat cushion juncture. The lap belt webbing also abraded the cinch bar on the latchplate assembly.

The driver attempted to brace against the steering wheel rim with both hands. His left hand separated from the wheel and impacted the upper instrument panel 16.5 - 18.5" left of center. The contact abraded the panel, compressed the energy absorbing material, and displaced the panel upward. As a result of the contact, the driver sustained a fractured left wrist. His right hand separated from the rim and probably impacted the center instrument panel area (no evidence of contact) which fractured his 4th and 5th metacarpals.

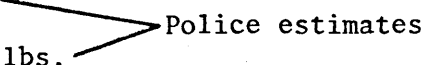
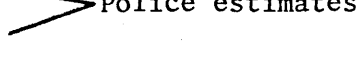
The driver's left knee impacted the left mid instrument panel adjacent to the backlight defroster switch. The contact cracked the plastic panel and deposited blue fabric transfers 20 - 23" left of center. As a result of the contact, he sustained a fractured left patella. The driver's lower left leg contacted the left side of the knee bolster at the fuse box cover. The contact produced blue fabric transfers on the struck component 20.5 - 21.5" left of center and abraded the driver's lower leg. His right knee impacted the knee bolster at the protrusion for the steering column and continued across the bolster into the center instrument panel adjacent to the radio. Abrasions and blue fabric transfers evidenced the contact sequence. As a result of the right knee loading, the driver sustained a ruptured tendon of the knee.

The driver was wearing prescription sunglasses as his face contacted the upper surface of the deployed air bag. The contact sequence compressed the eyeglasses against his face which resulted in a contusion around his left eye. The sunglasses were subsequently displaced from his face and were found on the floor with a lens separated from the plastic frames.

The driver's thoracic area subsequently loaded the deployed air bag with sufficient force to compress the bag against the steering wheel. His loading force was transmitted through the compressed air bag and into the steering assembly which resulted in bending of the steering wheel rim and compression of the energy absorbing steering column (2.5"). As a result of his loading against the active belt webbing and the air bag/steering assembly, the driver sustained four fractured ribs. He rebounded into the left front seat back where he came to rest.

The air bag provided the driver with additional restraint that prevented him from directly contacting the steering assembly. The air bag also provided the driver with a sufficient ride down from the severe crash forces which reduced the severity of his injuries.

## HUMAN FACTORS/OCCUPANT DATA (CONT'D.)

	<u>Vehicle #2</u>
Driver:	59 year old female
Height:	66" 
Weight:	160 lbs. 
Active Restraint System Usage:	3-point lap and shoulder belt, shoulder belt worn loose
Usage Source:	Vehicle inspection, police observations
Route Familiarity:	Daily
Trip Plan:	En route to school
Medical Treatment:	Not required, fatal at scene

## DRIVER #2 INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
Closed head injury, bleeding from nose and mouth	Unknown (HUUU-7)	Steering wheel rim/spokes
Severe thoracic injuries (unspecified)	Unknown (CUUU-7)	Steering wheel
Open fracture of the right hip area	Serious (PRFS-3)	Induced fracture from right knee loading into the lower instrument panel
Fractured teeth	Minor (FIFS-1)	Steering wheel rim

## DRIVER #2 KINEMATICS

The driver of vehicle #2 was probably in a normal seated position at impact. She was wearing the active 3-point lap and shoulder belt system; however, the shoulder belt was loosely adjusted across her torso. (The driver's husband stated that she routinely wore the shoulder belt loose to prevent the belt from rubbing against her neck.) In response to the 1 o'clock impact force, the driver moved forward and slightly to her right. She loaded the active belt webbing which abraded the upper seat back and the plastic extrusion at the seat cushion/seat back juncture. The improperly adjusted belt webbing did not provide adequate restraint as the driver continued forward into the steering assembly. Her head and facial area impacted the wheel at the upper right spoke area (which was probably rotated CCW at time of contact) and deformed both the rim and spoke 0.75" forward. Tooth fragments were found embedded into the aftermarket steering wheel cover immediately above the upper right spoke. As a result of the contact, the driver sustained fractured teeth and a closed head injury.

## DRIVER #2 KINEMATICS (CONT'D.)

The driver's torso subsequently contacted the wheel rim with sufficient force to bend the rim and the lower left spoke 0.75" forward. Her loading force also compressed the energy absorbing steering column 1.5". The driver's knees contacted and fractured the lower instrument panel on each side of the steering column. The energy from the right knee contact was transmitted through the femur and into the right hip which resulted in an open fracture of the right hip area.

The driver rebounded from the contacts and came to rest against the left front seat back with her body slumped to the right. She was removed from the vehicle by rescue personnel and was pronounced dead at the scene.

## RIGHT FRONT OCCUPANT DATA

Age:	9
Sex:	Female
Height:	Unknown
Weight:	Unknown
Active Restraint System Usage:	3-point lap and shoulder belt
Usage Source:	Vehicle inspection, passenger injuries, police
Manner of Leaving Scene:	Ambulance
Type of Medical Treatment:	Admitted to a local hospital for treatment of her injuries

## RIGHT FRONT OCCUPANT INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
Ruptured spleen	Moderate (MLRQ-2)	Shoulder belt webbing
Fractured ribs	Moderate (CUFS-2)	Shoulder belt webbing

## RIGHT FRONT OCCUPANT KINEMATICS

The right front passenger of vehicle #2 was restrained by the active 3-point lap and shoulder belt system. Based upon inspection of the belt webbing and the lack of head and/or thoracic contact points, the passenger was probably wearing the belt system correctly. At impact, she initiated a forward trajectory and loaded the belt webbing. Her loading force against the shoulder belt webbing abraded the right seat back at the apex of the side and top surfaces. The abraded vinyl was embedded into the belt webbing 45-47.5" above the floor anchor assembly. As a result of loading against the shoulder belt webbing, the passenger sustained fractured ribs and a ruptured spleen. The passenger's right knee contacted and

#### RIGHT FRONT OCCUPANT KINEMATICS (CONT'D.)

deformed the intruding glove box door to a depth of 1" No injury was reported from the contact.

The right front passenger of vehicle #2 was removed from the vehicle by rescue personnel and was transported to a local hospital where she was admitted for treatment of her injuries.

#### LEFT REAR OCCUPANT DATA

Age:	6
Sex:	Female
Height:	Unknown
Weight:	Unknown
Active Restraint System Usage:	Lap belt
Usage Source:	Vehicle inspection, police report
Manner of Leaving Scene:	Transported to a local hospital where she was pronounced dead on arrival

#### LEFT REAR OCCUPANT INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
Transection of the cervical spine	Maximum (NPEC-6)	Hyperextension of the neck from loading of the lap belt (Probable)

#### LEFT REAR OCCUPANT KINEMATICS

The left rear occupant was in an unknown seated position at impact. She was either holding a pet rabbit in a cardboard cage on her lap or had the cage positioned between her feet on the floor. The 6 year old occupant was wearing the lap belt that was equipped with an outboard mounted locking retractor. At impact, the passenger was thrust forward with respect to the decelerated vehicle and loaded the lap belt with her pelvic/abdominal area. Her unrestrained upper torso pitched forward which resulted in hyperextension of her head and transection of the cervical spinal cord.

It was remotely possible that her head impacted the upper right quadrant of the left front seat back, thus hyperflexing, resulting in the spinal cord injury. Faint transfers (tissue) were noted to the possible area of contact. The front seat assembly was displaced forward; therefore, the left rear occupant would had to have been seated on the forward edge of the rear seat cushion to impact the seat back.

#### LEFT REAR OCCUPANT KINEMATICS

The occupant was removed from the vehicle by rescue personnel and transported to a local hospital where she expired on arrival. Her injury was diagnosed by the medical staff. There was no autopsy performed at the request of her family.

#### RIGHT REAR OCCUPANT DATA

Age:	4
Sex:	Female
Height:	Unknown
Weight:	Unknown
Active Restraint System Usage:	Lap belt
Usage Source:	Vehicle inspection, occupant injuries
Manner of Leaving Scene:	Ambulance
Type of Medical Treatment:	Admitted to a local hospital for treatment of her injuries and observation

#### RIGHT REAR OCCUPANT INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
Kidney contusion	Moderate (MUCK-2)	Lap belt

#### RIGHT REAR OCCUPANT KINEMATICS

The 4 year old right rear occupant was in an unknown seated position and was wearing the lap belt restraint system. Belt usage was determined from a load induced separation of the plastic retainer clip on the outboard (retractor) side of the belt system. The occupant loaded the active belt webbing as she responded to the 1 o'clock impact force. Her loading of the lap belt resulted in a kidney contusion. The belt did prevent the occupant from contact with interior components and additional injury.

The occupant was removed from the vehicle by witnesses to the crash. She was subsequently transported to a local hospital where she was admitted for observation and treatment of her injuries.

ON-SCENE POLICE PHOTOGRAPHS



Pre-Impact Skidding Of The Plymouth And Final Rest Positions  
Of The Involved Vehicles.





Lateral Displacement Of The Plymouth Acclaim.



Impact Induced Displacement Of The Mercury Zephyr.



Final Rest Positions Of The Involved Vehicles.

SELECTED PRINTS



Pre-Crash Trajectory Of The Plymouth Acclaim.



Plymouth's Trajectory At 100' Pre-Impact.



Beginning Of The Plymouth's Right Front Skid Mark.





Beginning Of The Plymouth's Left Front Skid Mark As The Vehicle Skids  
In A Tracking Orientation To Impact.



Pre-Crash Trajectory Of Vehicle #2.



Pre-Crash Trajectory Of Vehicle #2.





Vehicle #2's Trajectory At 50', Prior To Impact.



Point Of Impact, Deflection Of The Acclaim's Skid Marks.





Frontal View Of The Plymouth Acclaim.

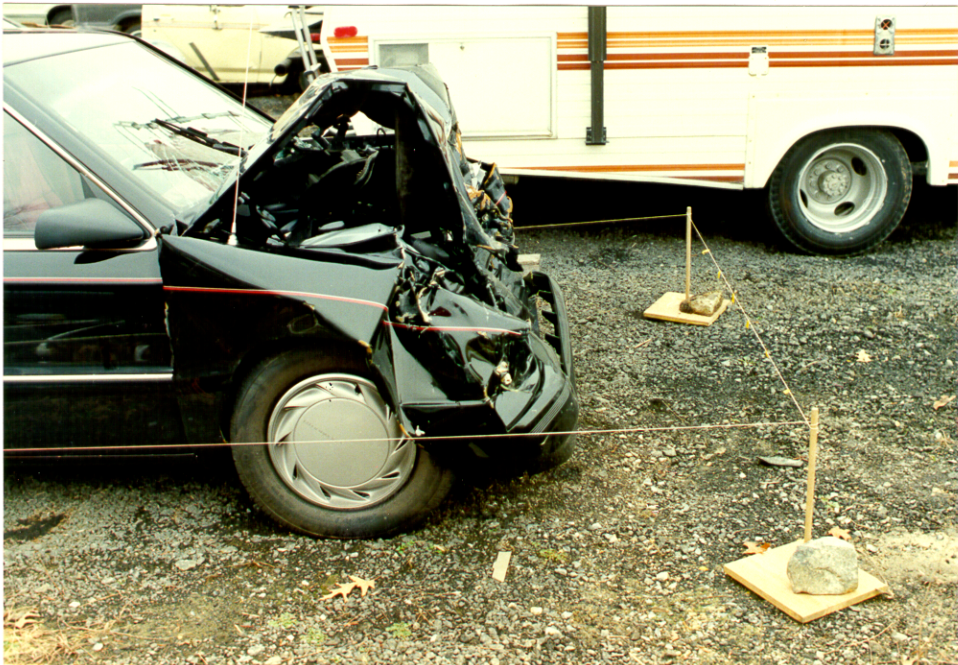


Left Front Three-Quarter View Of The Plymouth Acclaim.





Right Front Three-Quarter View Of The Plymouth.



Perpendicular View Of The Right Frontal Area Showing The Extent of Crush.





Overhead Views Showing The Extent of Frontal Crush.

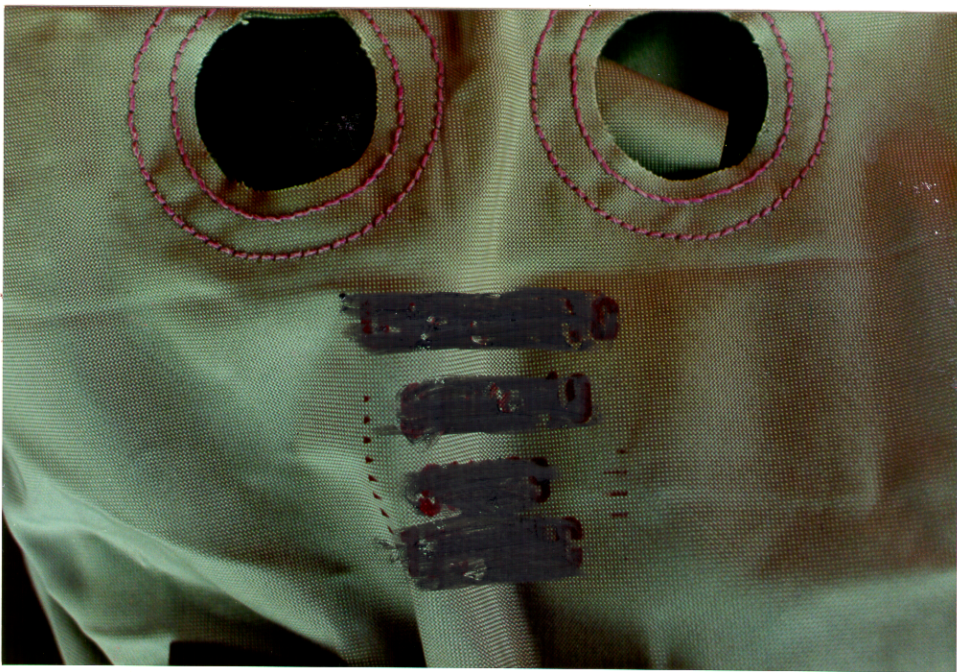




Overall Interior View Of The Deployed Air Bag And Occupant Contact Points.



Deployed Air Bag.



Air Bag Venting Ports and Identification Numbers.



Driver's Left Knee And Leg Contacts To The Mid Instrument Panel and Knee Bolster.





Closeup View Of The Driver's Knee And Leg Contacts.



Driver's Left Hand Contact To The Upper Instrument Panel.

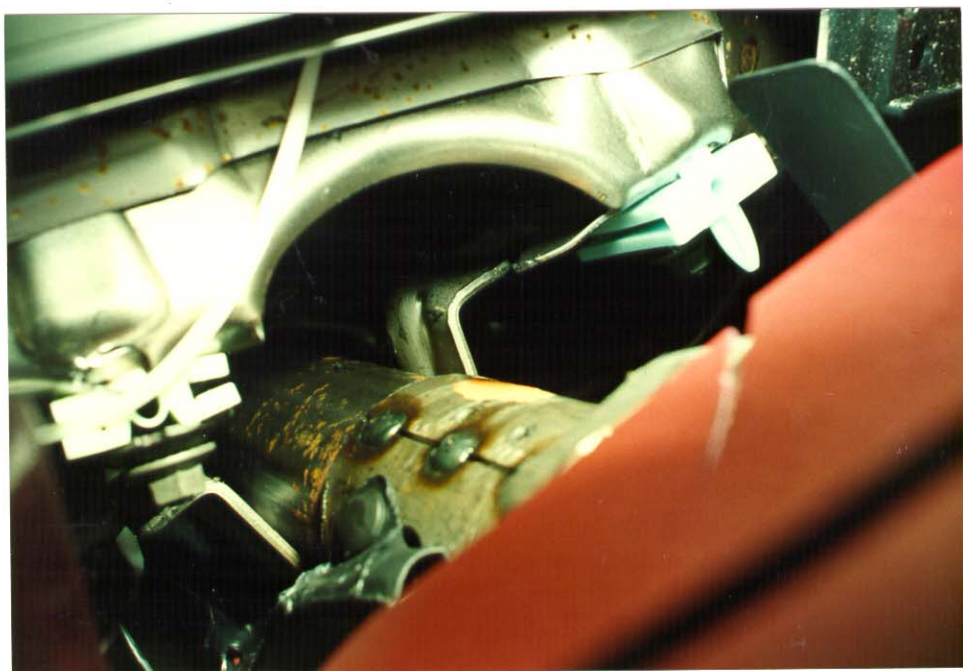


Perpendicular Views Of The Steering Wheel Rim Deformation  
That Resulted From Driver Loading.





Left Shear Capsule Separation.



Right Shear Capsule Separation.





Driver's Right Knee And Leg Contact To The Knee Bolster.



### Closeup View Of The Right Knee Contact



# Perpendicular View Of The Driver's Seated Position And Active 3-Point Restraint System





Driver's 3-Point Belt Webbing.



3" Diagonal D-Ring Transfer On The Shoulder Belt Webbing.



Lap Belt Loading Abrasions To The Plastic Extrusion  
At The Left Seatback/Seat Cushion Juncture.



Frontal View Of Vehicle #2.

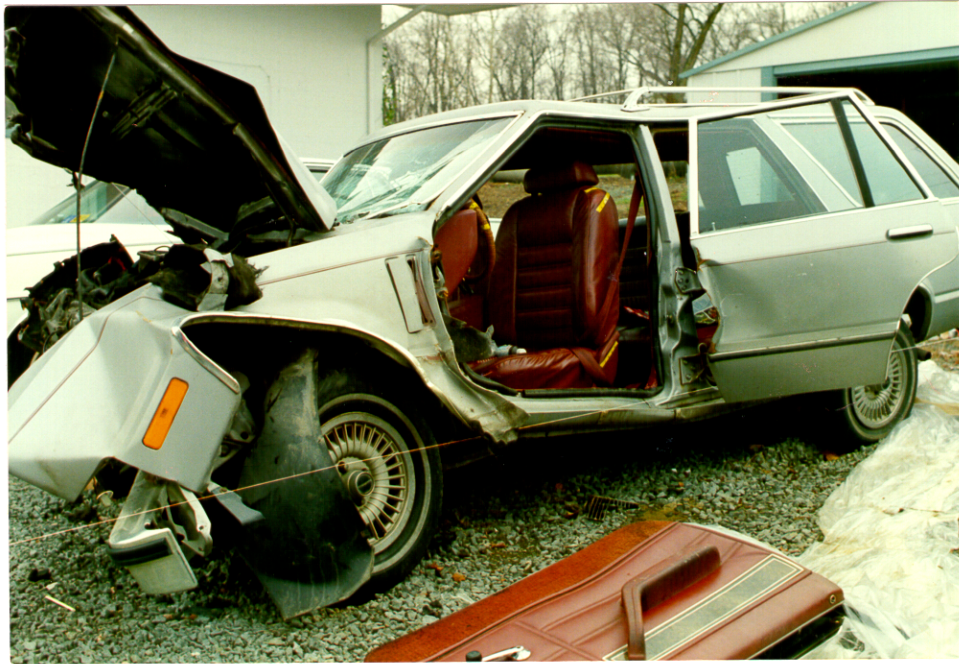




Left Front Three-Quarter View.



Perpendicular View Of The Left Frontal Area Showing The Extent Of Crush.



Left Side View of Vehicle #2.



Right Side View Of The Mercury Zephyr.





Closeup Views Of The Right Frontal Area Showing The Extent of Crush.





Overall Interior Views Of Driver #2's Trajectory And Contact.



Driver's Seated Position And Active Belt System.

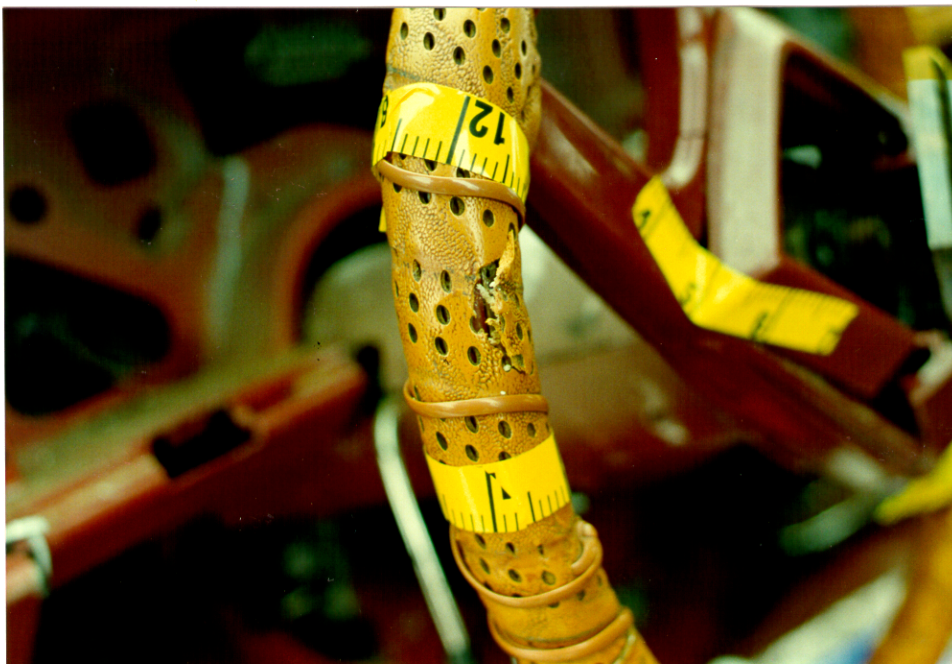


Shoulder Belt Abrasion To The Left Front Seatback.





Lap Belt Abrasion To The Plastic Extrusion At The Seatback/Cushion Juncture.



Driver's Tooth Fragments Embedded Into The Aftermarket Steering Wheel Cover.

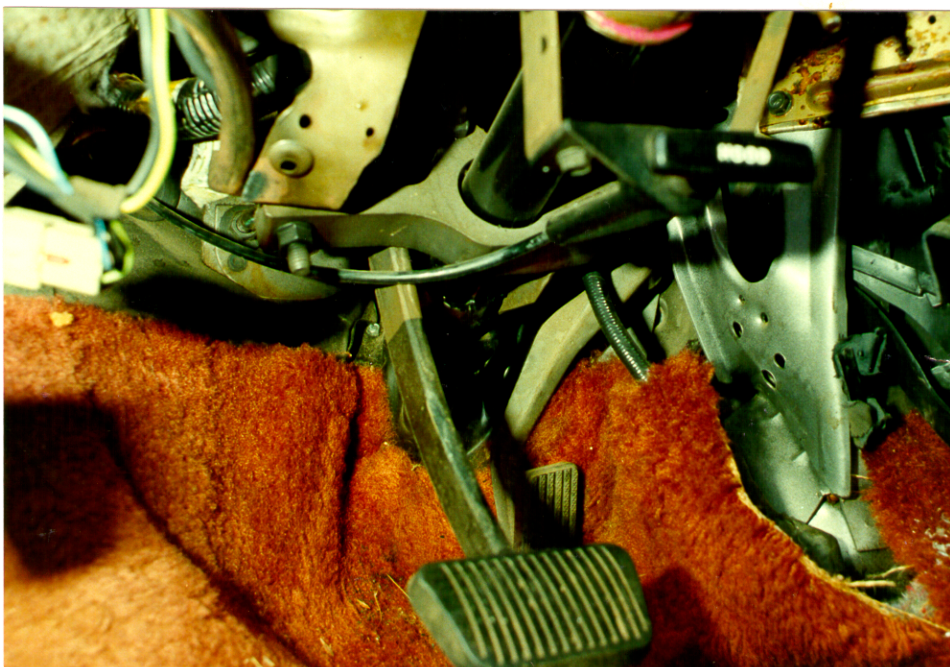


Right Front Passenger's Active Belt Webbing And Belt Abrasion  
To The Right Upper Seatback.



Right Front Passenger's Right Knee Contact To The Glove Box Area.





Mercury Zephyr's Steering Column Compression.

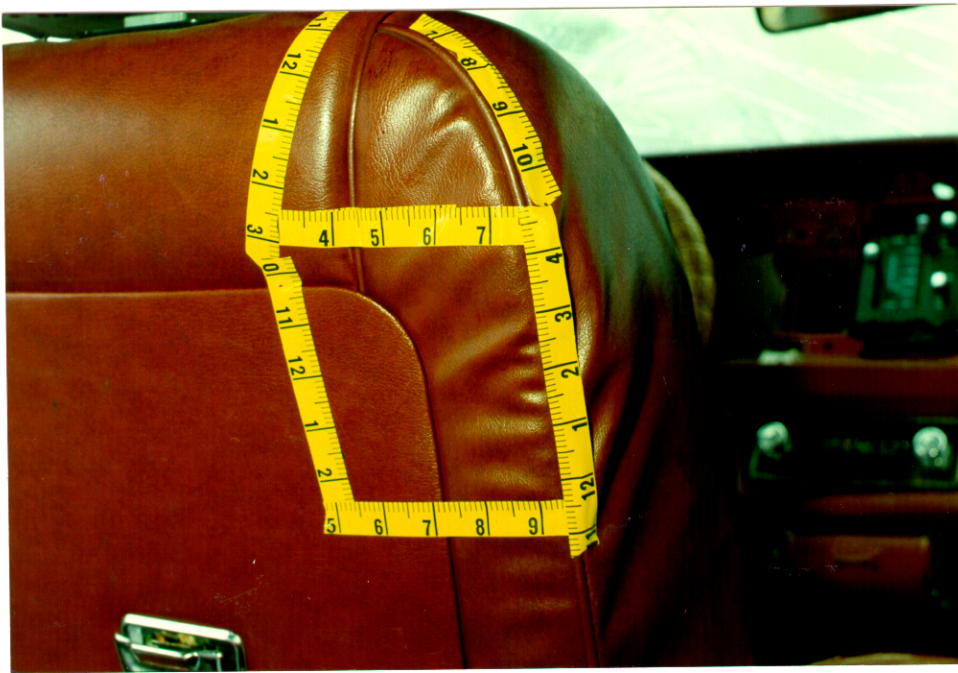


Overall View Of The Right Front Occupant's Position and Contact Points.



Rear Seat Views Of The Front Seatbacks And Lap Belt Systems.





Possible Left Rear Occupant's Head Contact To The Front Seatback.



Left Rear Occupant's Loading Damage To The Lap Belt Guide.





Separation Of The Right Rear Belt Guide From Right Rear Occupant Loading.

## SLIDE INDEX

<u>Slide No(s).</u>	<u>Description</u>
1	Accident schematic
2	Driver injury mannequin
3-7	Pre-crash trajectory of the Plymouth Acclaim
8,9	Beginning of the Acclaim's skid marks
10	Point of impact
11	Lookback view of the vehicle's trajectory
12-15	Pre-crash trajectory of vehicle #2
16	Vehicle #2's heading at point of impact
17	Lookback view of vehicle #2's trajectory
18-20	Frontal views of the Plymouth Acclaim
21	Left front three-quarter view
22,23	Overhead views showing the extent of crush
24	Hood contact to the vehicle's windshield
25	Left side view
26,27	Rear three-quarter view
28	Right side view
29,30	Hood displacement on the Acclaim
31	Deformed engine compartment
32	Right front three-quarter view
33	Perpendicular view showing the extent of crush
34	Overhead view showing the extent of crush
35	Overall interior view of the driver contact points and the deployed air bag
36	Deployed air bag

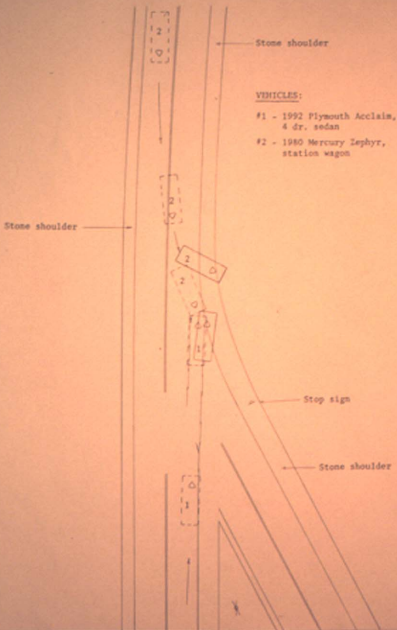
SLIDE INDEX (CONT'D.)

<u>Slide No(s).</u>	<u>Description</u>
37	Driver's left hand/wrist contact to upper instrument panel
38	Perpendicular view of the steering assembly
39	Forward displacement of the steering column
40	Shear capsule separation
41,42	Driver's left knee/lower leg contact
43-45	Views across the interior from the right door area
46	Driver's right knee contact to the knee bolster
47	Steering wheel deformation from driver loading
48	Driver's seat position and active belt system
49	Lap belt loading abrasion to the plastic cover
50,51	D-ring transfer on the shoulder belt webbing
52	Frontal view of vehicle #2
53	Left front three-quarter view
54	Perpendicular view showing the extent of crush at the left corner
55	Left side view
56,57	Rear three-quarter views
58	Right side view
59-61	Right front corner views showing the extent of crush
62,63	Overall views of the driver's seated position and contact points
64	Driver contact damage to the steering assembly
65	Tooth fragments embedded into the steering wheel cover
66	Steering column compression
67	Driver's seat and active belt webbing
68	Lap belt abrasion to the plastic cover
69	Shoulder belt abrasion to the seat back

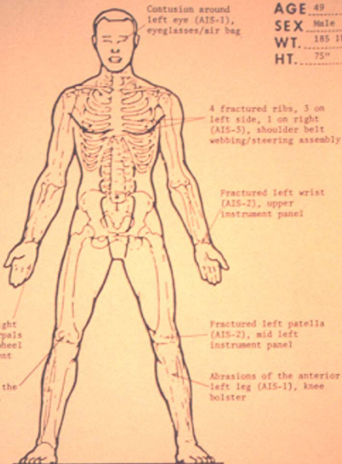
SLIDE INDEX (CONT'D.)

<u>Slide No(s).</u>	<u>Description</u>
70,71	Views of the right front occupant's space
72	Right front occupant's right knee contact to the lower instrument panel area
73,74	Shoulder belt abrasion to the right front seat back
75	View of the right front interior from the rear seat area
76	Rear seat view
77	Displaced front seat and possible contact points
78	Left rear lap belt loading damage
79,80	Probable left rear occupant's head contact to the front seat back
81	View across the interior from the right rear door area
82	Right rear lap belt loading damage

ACCIDENT SCHEMATIC  
CALSPAN CASE NO. 91-14



AGE 49  
SEX Male  
WT. 185 lbs.  
HT. 75"











200



50'









↑  
L F







200



150'







50'









































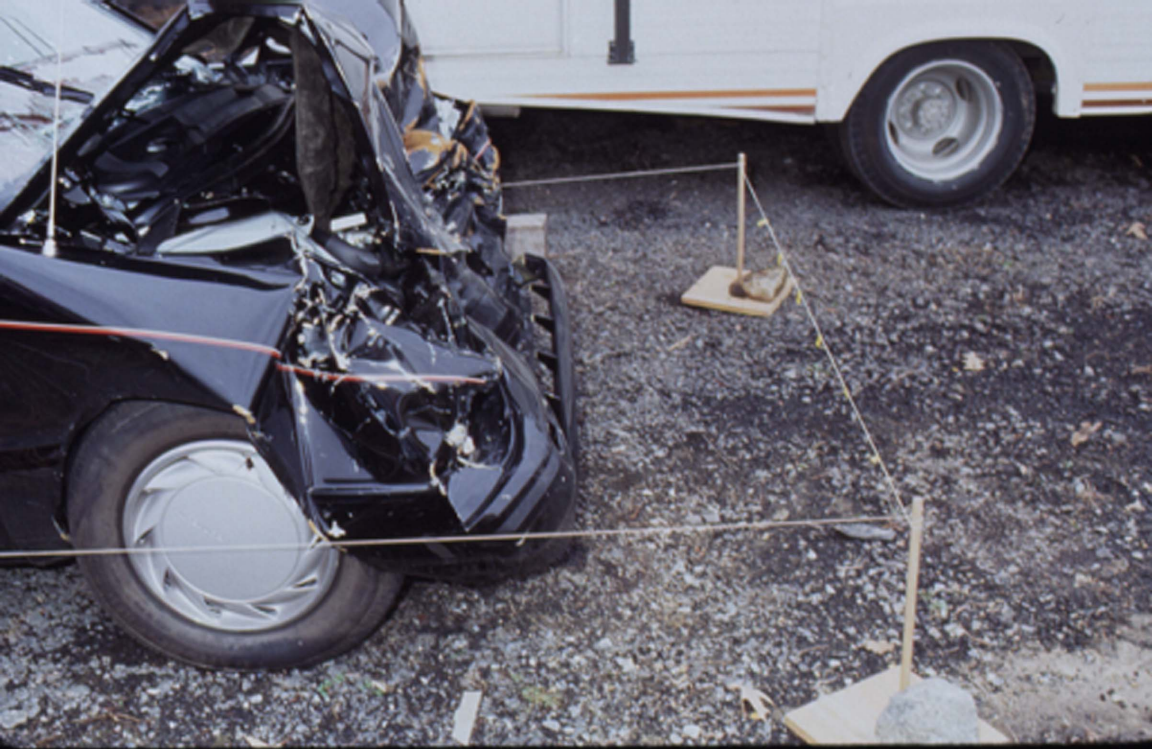
























MANUFACTURE  
CASE NUMBER  
YEAR

Calspan  
CA 9114  
1991

# SLIDES

THE FOLLOWING SLIDE(S) ARE NOT INCLUDED IN THIS CASE:

SLIDE NUMBER(S)      \* 40













































































































APPENDIX A

Police Accident Report

## POLICE ACCIDENT REPORT

2 AGENCY COPY

FR 300P (REV 7/86)

PAGE 1 OF 1 PAGES

ACCIDENT DATE Year <u>81</u> Month <u>11</u> Day <u>11</u>	DAY OF WEEK <u>TH</u>	TIME <u>9:10</u> AM/PM	COUNTY OF ACCIDENT <u>DE</u>	MILE POST NUMBER <u>118</u>	RAILROAD CROSSING ID. NO. IF WITHIN 150 FEET <u>118</u>
CITY OR TOWN <u>RI</u>			LANDMARKS AT SCENE <u>TOLE</u>	NUMBER OF VEHICLES <u>2</u>	OFFICIAL USE ONLY <u>91</u> <u>Time 805</u> <u>9RID</u>
ROUTE NO. OR STREET NAME AT SCENE <u>Rt. 1</u>					

AT INTERSECTION WITH		OR <u>32</u>	MILES <input type="checkbox"/> FEET <input checked="" type="checkbox"/>	N <input type="checkbox"/> S <input checked="" type="checkbox"/> E <input type="checkbox"/> W <input type="checkbox"/>	OF <u>Rt. 1</u>
----------------------	--	--------------	-------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------	-----------------

VEHICLE NO. 1				VEHICLE NO. 2 (OR PEDESTRIAN)			
DRIVER'S NAME (LAST, FIRST, MIDDLE) <u>[REDACTED]</u>		OCCUPATION <u>TEACHER</u>		DRIVER'S NAME (LAST, FIRST, MIDDLE) <u>[REDACTED]</u>		OCCUPATION <u>MAINTENANCE</u>	
ADDRESS (STREET & NO.) <u>[REDACTED]</u>		YEARS OF DRIVING EXPERIENCE <u>10</u>		ADDRESS (STREET & NO.) <u>[REDACTED]</u>		YEARS OF DRIVING EXPERIENCE <u>33</u>	
CITY <u>[REDACTED]</u>	STATE <u>MD</u>	ZIP CODE <u>[REDACTED]</u>		CITY <u>[REDACTED]</u>	STATE <u>[REDACTED]</u>	ZIP CODE <u>[REDACTED]</u>	

DATE OF BIRTH Month <u>11</u> Day <u>11</u> Year <u>81</u>	SEX <u>F</u>	DRIVER'S LICENSE NUMBER <u>[REDACTED]</u>	STATE <u>MD</u>	DATE OF BIRTH Month <u>11</u> Day <u>11</u> Year <u>81</u>	SEX <u>M</u>	DRIVER'S LICENSE NUMBER <u>[REDACTED]</u>	STATE <u>VA</u>
VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE) <u>[REDACTED]</u>				VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE) <u>[REDACTED]</u>			
ADDRESS (STREET & NO.) <u>[REDACTED]</u>				ADDRESS (STREET & NO.) <u>[REDACTED]</u>			
CITY <u>[REDACTED]</u>		STATE <u>[REDACTED]</u>	ZIP CODE <u>[REDACTED]</u>	CITY <u>[REDACTED]</u>		STATE <u>[REDACTED]</u>	ZIP CODE <u>[REDACTED]</u>

MAKE & TYPE OF VEHICLE (SHOW MOPED, MOTORCYCLE, AMBULANCE, ETC.) <u>BUICK</u>	YEAR <u>80</u>	REPAIR COST <u>3500</u>	MAKE & TYPE OF VEHICLE (SHOW MOPED, MOTORCYCLE, AMBULANCE, ETC.) <u>PLYMOUTH</u>	YEAR <u>77</u>	REPAIR COST <u>15000</u>
LICENSE PLATE NUMBER <u>[REDACTED]</u>	STATE <u>MD</u>	NAME OF INSURANCE CO. (NOT AGENT) <u>[REDACTED]</u>	LICENSE PLATE NUMBER <u>[REDACTED]</u>	STATE <u>VA</u>	NAME OF INSURANCE CO. (NOT AGENT) <u>[REDACTED]</u>

DAMAGE TO PROPERTY OTHER THAN VEHICLES <input type="checkbox"/>	OBJECT STRUCK (TREE, FENCE, ETC.) <u>X</u>	OWNER'S NAME (LAST, FIRST, MIDDLE) <u>[REDACTED]</u>	ADDRESS <u>[REDACTED]</u>	REPAIR COST <u>X</u>
--------------------------------------------------------------------	-----------------------------------------------	---------------------------------------------------------	------------------------------	-------------------------

VEHICLE NO. 1 DAMAGE CHECK POINTS OF IMPACT	ACCIDENT DIAGRAM	VEHICLE NO. 2 DAMAGE CHECK POINTS OF IMPACT
 FRONT 1 2 3 4 5 6 7 8	 N INDICATE NORTH BY ARROW	 FRONT 1 2 3 4 5 6 7 8
SPEED BEFORE ACCIDENT <u>45</u> LIMIT <u>55</u> MAXIMUM SAFE <u>0</u>		SPEED BEFORE ACCIDENT <u>55</u> LIMIT <u>55</u> MAXIMUM SAFE <u>55</u>

VEHICLE NO. 1 DAMAGES:				VEHICLE NO. 2 DAMAGES:			
1 UNKNOWN	2 NO DAMAGE	3 OVERTURNED	4 MOTOR	1 UNKNOWN	2 NO DAMAGE	3 OVERTURNED	4 MOTOR
TOTALS 6				TOTALS 6			

ACCIDENT DESCRIPTION: VEHICLE #1 WAS NORTHBOUND ON R. 1 JUST SOUTH OF R. 1. DRIVER #1 ATTEMPTED TO MAKE A LEFT TURN ACROSS THE SOUTHBOUND LANE OF R. 1. VEHICLE #1 WAS STRUCK HEAD ON BY VEHICLE #2.

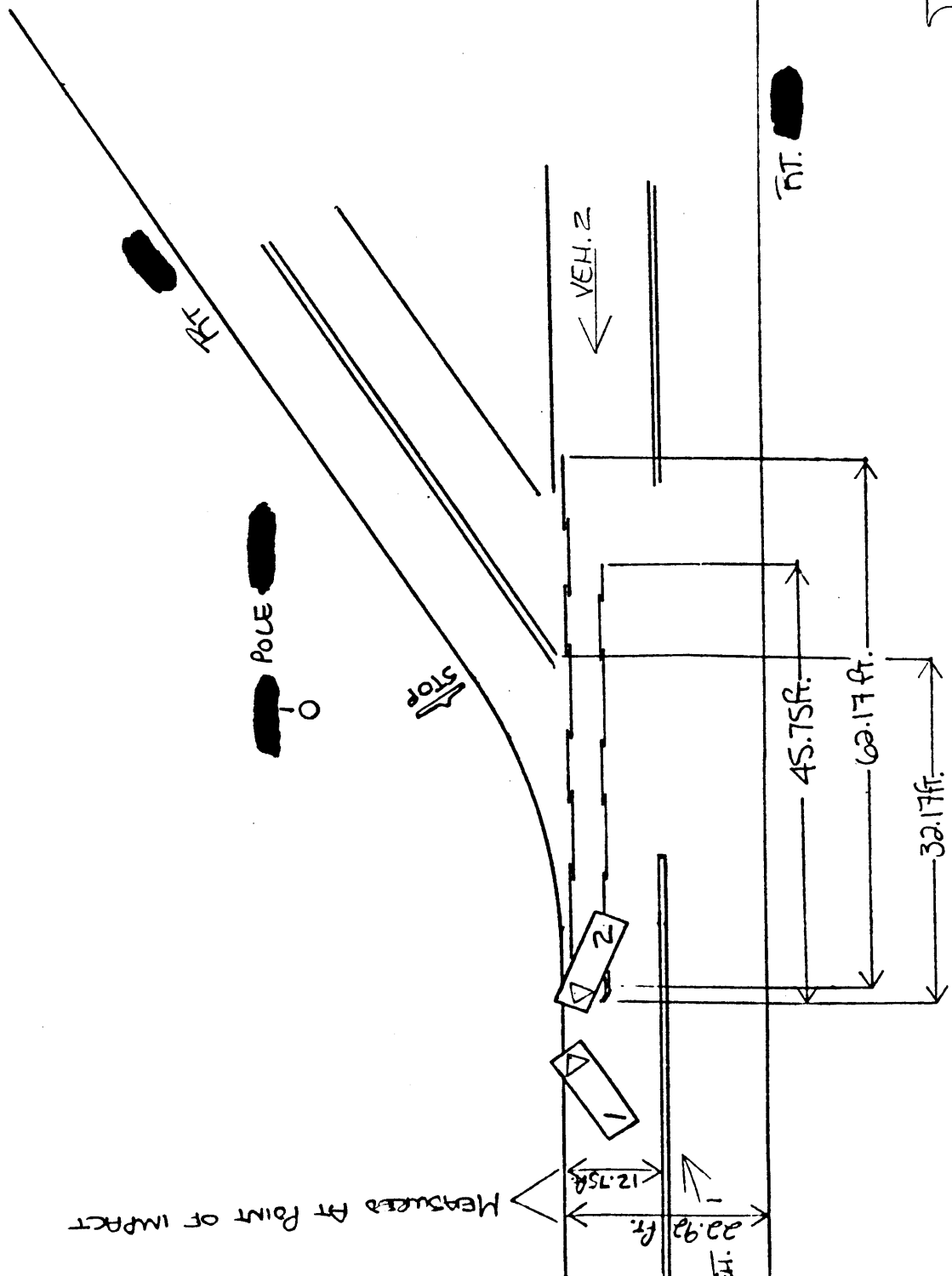
OFFENSES CHARGED DRIVER: NONE

9	10	11	12	13	14	15	16	NAMES OF INJURED - IF DECEASED, INCLUDE DATE OF DEATH
<u>2</u>	<u>1</u>	<u>6</u>	<u>1</u>	<u>06115142</u>	<u>M</u>	<u>4</u>	<u>X</u>	<u>[REDACTED]</u>
<u>1</u>	<u>1</u>	<u>4</u>	<u>1</u>	<u>05107132</u>	<u>F</u>	<u>1</u>	<u>X</u>	<u>[REDACTED]</u>
<u>1</u>	<u>4</u>	<u>3</u>	<u>1</u>	<u>09112185</u>	<u>F</u>	<u>5</u>	<u>X</u>	<u>[REDACTED]</u>
<u>1</u>	<u>3</u>	<u>4</u>	<u>1</u>	<u>06130182</u>	<u>F</u>	<u>2</u>	<u>X</u>	<u>[REDACTED]</u>
<u>1</u>	<u>6</u>	<u>2</u>	<u>1</u>	<u>03175187</u>	<u>F</u>	<u>4</u>	<u>X</u>	<u>[REDACTED]</u>

TROOP/OFFICER'S NAME <u>[REDACTED]</u>	BADGE/CODE NUMBER <u>[REDACTED]</u>	DEPARTMENT NAME AND CODE NUMBER <u>[REDACTED]</u>	REVIEWING OFFICER <u>[REDACTED]</u>	DATE REPORT FILED <u>[REDACTED]</u>
-------------------------------------------	----------------------------------------	------------------------------------------------------	----------------------------------------	----------------------------------------

TIME +IRS

MEASURED AT POINT OF IMPACT  
22.92 ft.  
12.75 ft.





IF A QUESTION DOES NOT APPLY, ENTER AN "X". IF AN ANSWER IS UNKNOWN, ENTER A "U". "OTHER" EXPLAIN IN ACCIDENT DESCRIPTION

PB 300P 1/78

<b>TRAFFIC CONTROL</b> 1. NO TRAFFIC CONTROL 2. OFFICER OR WATCHMAN 3. TRAFFIC SIGNAL 4. STOP SIGN 5. SLOW OR WARNING SIGN 6. TRAFFIC LANES MARKED 7. NO PASSING LINE 8. YIELD SIGN 9. ONE WAY ROAD OR STREET 10. RAILROAD CROSSING WITH MARKINGS AND SIGNS 11. RAILROAD CROSSING WITH SIGNALS 12. RAILROAD CROSSING WITH GATE AND SIGNALS 13. OTHER		<b>DRIVER'S ACTION</b> 1. NONE 2. EXCEEDED SPEED LIMIT 3. EXCEEDED SAFE SPEED BUT NOT SPEED LIMIT 4. OVERTAKING ON HILL 5. OVERTAKING ON CURVE 6. OVERTAKING AT INTERSECTION 7. SURPRISE PASSING OF TRUCK OR BUS 8. CUTTING IN 9. OTHER IMPROPER PASSING 10. WRONG SIDE OF ROAD WITH OVERTAKING 11. DID NOT HAVE RIGHT OF WAY 12. FOLLOWING TOO CLOSE 13. FAIL TO SIGNAL OR IMPROPER SIGNAL 14. IMPROPER TURN WITH RIGHT TURN 15. IMPROPER TURN CUT CORNER ON LEFT TURN 16. IMPROPER TURN FROM WRONG LANE 17. OTHER IMPROPER TURNING 18. IMPROPER BACKING 19. IMPROPER START FROM PARKED POSITION		20. DISREGARDED OFFICER OR WATCHMAN 21. DISREGARDED STOP GO LIGHT 22. DISREGARDED STOP OR YIELD SIGN 23. DRIVER PATTERNING 24. FAIL TO STOP AT THROUGH HIGHWAY NO SIGN 25. DRIVE THROUGH SAFETY ZONE 26. FAIL TO SET OUT FLARES OR FLAGS 27. FAIL TO DIM HEADLIGHTS 28. DRIVING WITHOUT LIGHTS 29. IMPROPER PARKING LOCATION 30. AVOIDING PEDESTRIAN 31. AVOIDING OTHER VEHICLE 32. AVOIDING ANIMAL 33. GROUND OFF ROADWAY 34. HIT AND RUN 35. CAR RAN AWAY NO DRIVER 36. BLINDED BY LIGHTS 37. OTHER VIOLATIONS	
<b>WAS TRAFFIC CONTROL DEVICE WORKING BEFORE ACCIDENT?</b> 1. YES 2. NO		<b>VEHICLE MANEUVER</b> 1. GOING STRAIGHT AHEAD 2. MAKING RIGHT TURN 3. MAKING LEFT TURN 4. MAKING U-TURN 5. SLOWING OR STOPPING 6. STARTING IN TRAFFIC LANE 7. STARTING FROM PARKED POSITION 8. STOPPED IN TRAFFIC LANE 9. RAN OFF ROAD RIGHT 10. RAN OFF ROAD LEFT 11. PARKED 12. BACKING 13. PASSING 14. CHANGING LANES 15. OTHER			
<b>ALIGNMENT</b> 1. STRAIGHT - LEVEL 2. CURVE - LEVEL 3. GRADE - STRAIGHT 4. GRADE - CURVE 5. HILLOREST - STRAIGHT 6. HILLOREST - CURVE 7. OP - STRAIGHT 8. OP - CURVE 9. OTHER		<b>TYPE OF COLLISION</b> 1. REAR END 2. ANGLE 3. HEAD ON 4. SIDEWIPES - SAME DIRECTION 5. SIDEWIPES - OPPOSITE DIRECTION 6. FIXED OBJECT IN ROAD 7. TRAIN 8. NON COLLISION 9. FIXED OBJECT - OFF ROAD 10. DEER 11. OTHER ANIMAL 12. PEDESTRIAN 13. BICYCLIST 14. MOTORCYCLIST 15. BACKED INTO 16. OTHER			
<b>WEATHER</b> 1. CLEAR 2. CLOUDY 3. FOG 4. MIST 5. RAINING 6. SNOWING 7. SLEETING 8. SMOKE - DUST 9. OTHER		<b>COLLISION WITH FIXED OBJECT</b> 1. BANK OR LEDGE 2. TREES 3. UTILITY POLE 4. FENCE OR FENCE POST 5. GUARD RAIL OR POST 6. PARKED VEHICLE 7. BRIDGE UNDERPASS, CURVE, ETC. 8. SIGN TRAFFIC SIGNAL 9. IMPACT CUSHIONING DEVICE 10. OTHER			
<b>SURFACE CONDITION</b> 1. DRY 2. WET 3. SLIPY 4. ICE 5. MUDDY 6. OIL 7. OTHER		<b>DRIVER VISION OBSCURED</b> 1. NOT OBSCURED 2. RAIN, SNOW, ETC. ON WINDSHIELD 3. WINDSHIELD OTHERWISE OBSCURED 4. VISION OBSCURED BY LOAD ON VEHICLE 5. TREES, BRUSH, ETC. 6. BUILDING 7. EMBANKMENT 8. DASHBOARD 9. HILL CREST 10. PARKED VEHICLES 11. MOVING VEHICLES 12. SUN OR HEADLIGHT GLARE 13. OTHER			
<b>ROADWAY DEFECTS</b> 1. NO DEFECTS 2. HOLES, RUTS, BUMPS 3. SOFT OR LOW SHOULDER 4. UNDER REPAIR 5. LOOSE MATERIAL 6. RESTRICTED WIDTH 7. SLICK PAVEMENT 8. ROADWAY OBSTRUCTED 9. OTHER DEFECTS		<b>COMMONWEALTH OF VIRGINIA DIVISION OF MOTOR VEHICLES</b> <b>POLICE ACCIDENT REPORT</b>			
<b>LIGHT</b> 1. DAWN 2. DAYLIGHT 3. DUSK 4. DARKNESS - STREET OR HIGHWAY LIGHTED 5. DARKNESS - STREET OR HIGHWAY NOT LIGHTED		<b>CONDITION OF DRIVERS AND PEDESTRIAN</b> 1. NO DEFECTS 2. EYESIGHT DEFECTIVE 3. HEARING DEFECTIVE 4. OTHER BODY DEFECTS 5. CL 6. FAINTEED 7. APPARENTLY ASLEEP 8. OTHER HANDICAP			
<b>KIND OF LOCALITY</b> 1. SCHOOL 2. CHURCH 3. PLAYGROUND 4. OPEN COUNTRY 5. BUSINESS INDUSTRIAL 6. RESIDENTIAL 7. INTERSTATE 8. OTHER		<b>DRINKING</b> 1. HAD NOT BEEN DRINKING 2. DRINKING - OBVIOUSLY DRUNK 3. DRINKING - ABILITY IMPAIRED 4. DRINKING - ABILITY NOT IMPAIRED 5. DRINKING - NOT KNOWN WHETHER IMPAIRED			
<b>WHICH VEHICLE OCCURRED</b> 1. VEHICLE NO. 1 2. VEHICLE NO. 2 B. BICYCLIST P. PEDESTRIAN 0. OTHER		<b>DRURY TYPE</b> 1. DEAD BEFORE REPORT MADE 2. VISIBLE SIGNS OF INJURY AS BLEEDING, WOUND OR DISTORTED MEMBER OR HAD TO BE CARRIED FROM SCENE 3. OTHER VISIBLE INJURY AS BRUISES, ABRASIONS, SWELLING, LIMPING, ETC. 4. NO VISIBLE INJURY BUT COMPLAINT OF PAIN OR MOMENTARY UNCONSCIOUSNESS			
<b>POSITION IN/ON VEHICLE</b> 1. DRIVER 2. PASSENGERS 3. HANGING ON OUTSIDE		<b>PEDESTRIAN ACTIONS</b> 1. CROSSING AT INTERSECTION WITH SIGNAL 2. CROSSING AT INTERSECTION AGAINST SIGNAL 3. CROSSING AT INTERSECTION NO SIGNAL 4. CROSSING AT INTERSECTION DIAGONALLY 5. CROSSING NOT AT INTERSECTION - RURAL 6. CROSSING NOT AT INTERSECTION - URBAN 7. COMING FROM BEHIND PARKED CARS 8. GETTING ON OR ON SCHOOL BUS 9. PLAYING IN ROADWAY 10. GETTING OFF OR ON OTHER VEHICLE 11. HITTING ON VEHICLE 12. WALKING IN ROADWAY WITH TRAFFIC 13. WALKING IN ROADWAY WITH TRAFFIC 14. WALKING IN ROADWAY AGAINST TRAFFIC 15. WALKING IN ROADWAY AGAINST TRAFFIC 16. WALKING IN ROADWAY 17. STANDING IN ROADWAY 18. LYING IN ROADWAY 19. NOT IN ROADWAY 20. OTHER			
<b>SAFETY EQUIPMENT USED</b> 1. NO RESTRAINT USED 2. LAP BELT 3. HARNESS 4. LAP BELT AND HARNESS 5. CHILD RESTRAINT 6. AIR BAG 7. OTHER		<b>VEHICLE CONDITION</b> 1. NO DEFECTS 2. LIGHTS DEFECTIVE 3. BRAKES DEFECTIVE 4. STEERING DEFECTIVE 5. PUNCTURE OR BLOWOUT 6. WORN OR SLICK TIRES 7. MOTOR TROUBLE 8. CHAIRS IN USE 9. OTHER DEFECTS			
<b>EJECTION FROM VEHICLE</b> 1. NOT EJECTED 2. PARTIALLY EJECTED 3. EJECTED		<b>SKIDDING</b> 1. BEFORE APPLICATION OF BRAKES 2. AFTER APPLICATION OF BRAKES 3. BEFORE AND AFTER APPLICATION OF BRAKES			
<b>BIRTH DATE</b> MONTH DAY YEAR		<b>SEX</b> M/F			
NAMES OF ALLIED IF DECEASED, INCLUDE DATE OF DEATH					

## APPENDIX B

### CRASHPC Output

## CRASH3 RECONSTRUCTION

IMPACT SPEED		TOTAL (MPH)	LONG. (MPH),	LAT. (MPH)	
(LINEAR MOMENTUM	VEH #1	44.9	44.9	.0	
AND SPINOUT)	VEH #2	32.1	32.1	.0	
SPEED CHANGE		TOTAL (MPH)	LONG. (MPH)	LAT. (MPH)	ANG. (DEG)
(DAMAGE)	VEH #1	38.1	-37.3	7.8	-11.8
	VEH #2	34.3	-32.8	-9.9	16.8
(LINEAR MOMENTUM	VEH #1	39.6	-39.3	5.5	-8.0
AND SPINOUT)	VEH #2	35.7	-33.4	-12.5	20.5
ENERGY DISSIPATED BY DAMAGE	VEH#1:136544.7 FT-LB		VEH#2:148522.7 FT-LB		

## SCENE INFORMATION

	VEHICLE # 1	VEHICLE # 2
IMPACT X-POSITION	11.00 FT.	25.90 FT.
IMPACT Y-POSITION	10.10 FT.	6.50 FT.
IMPACT HEADING ANGLE	3.50 DEG.	155.00 DEG.
REST X-POSITION	12.60 FT.	33.10 FT.
REST Y-POSITION	13.20 FT.	15.30 FT.
REST HEADING ANGLE	12.00 DEG.	117.00 DEG.
DIRECTION OF ROTATION	CW	CCW
AMOUNT OF ROTATION	<360	<360

## COLLISION CONDITIONS

VEHICLE # 1	VEHICLE # 2
XC10' = 11.0 FT.	XC20' = 25.9 FT.
YC10' = 10.1 FT.	YC20' = 6.5 FT.
PSI10 = 3.5 DEG.	PSI20 = 155.0 DEG.
PSI1D0 = .0 DEG/SEC	PSI2D0 = .0 DEG/SEC
BETA1 = .0 DEG.	BETA2 = .0 DEG.

## SEPARATION CONDITIONS (USING SPINOUT)

VEHICLE # 1	VEHICLE #2
US1 = 5.7 MPH	US2 = -1.3 MPH
VS1 = 5.5 MPH	VS2 = -12.5 MPH
PSISD1 = 21.0 DEG/SEC	PSISD2 = -45.2 DEG/SEC

RELATIVE VELOCITY (LINEAR MOMENTUM)	VEHICLE #1	VEHICLE #
SPEED ALONG LINE THRU CG:	42.9 MPH	31.5 MP
SPEED ORTHOG. TO CG LINE:	13.2 MPH	-6.4 MP
CLOSING VELOCITY (LINEAR MOMENTUM) :	74.4 MPH	

## DIMENSIONS AND INERTIAL PROPERTIES

A1	=	51.3	IN.	A2	=	51.3	IN.
B1	=	55.5	IN.	B2	=	55.5	IN.
TR1	=	58.9	IN.	TR2	=	58.9	IN.
I1	=	25660.3	LB-SEC**2-IN	I2	=	28521.1	LB-SEC**2-IN
M1	=	7.720	LB-SEC**2/IN	M2	=	8.580	LB-SEC**2/IN
XF1	=	89.8	IN.	XF2	=	89.8	IN.
XR1	=	-106.4	IN.	XR2	=	-106.4	IN.
YS1	=	36.3	IN.	YS2	=	36.3	IN.

## ROLLING RESISTANCE

## VEHICLE # 1

LF----- .50  
 RF----- .50  
 LR----- .02  
 RR----- .02  
  
 MU----- .75

## VEHICLE # 2

LF----- .70  
 RF----- 1.00  
 LR----- .30  
 RR----- .30

PRESS ANY KEY TO CONTINUE

SUMMARY OF DAMAGE DATA  
VEHICLE # 1

TYPE-----CATEGORY 3  
 STIFFNESS---CATEGORY 9  
 WEIGHT----- 2969.0 LBS.  
 CDC-----11FDEW3  
 L----- 62.0 IN.  
 C1----- 24.5 IN.  
 C2----- 29.5 IN.  
 C3----- 31.0 IN.  
 C4----- 28.0 IN.  
 C5----- 23.6 IN.  
 C6----- 16.9 IN.  
 D----- .0  
 RHO----- 1.00 \*  
 ANG----- -11.8 DEG.  
 D'----- -1.7 IN.

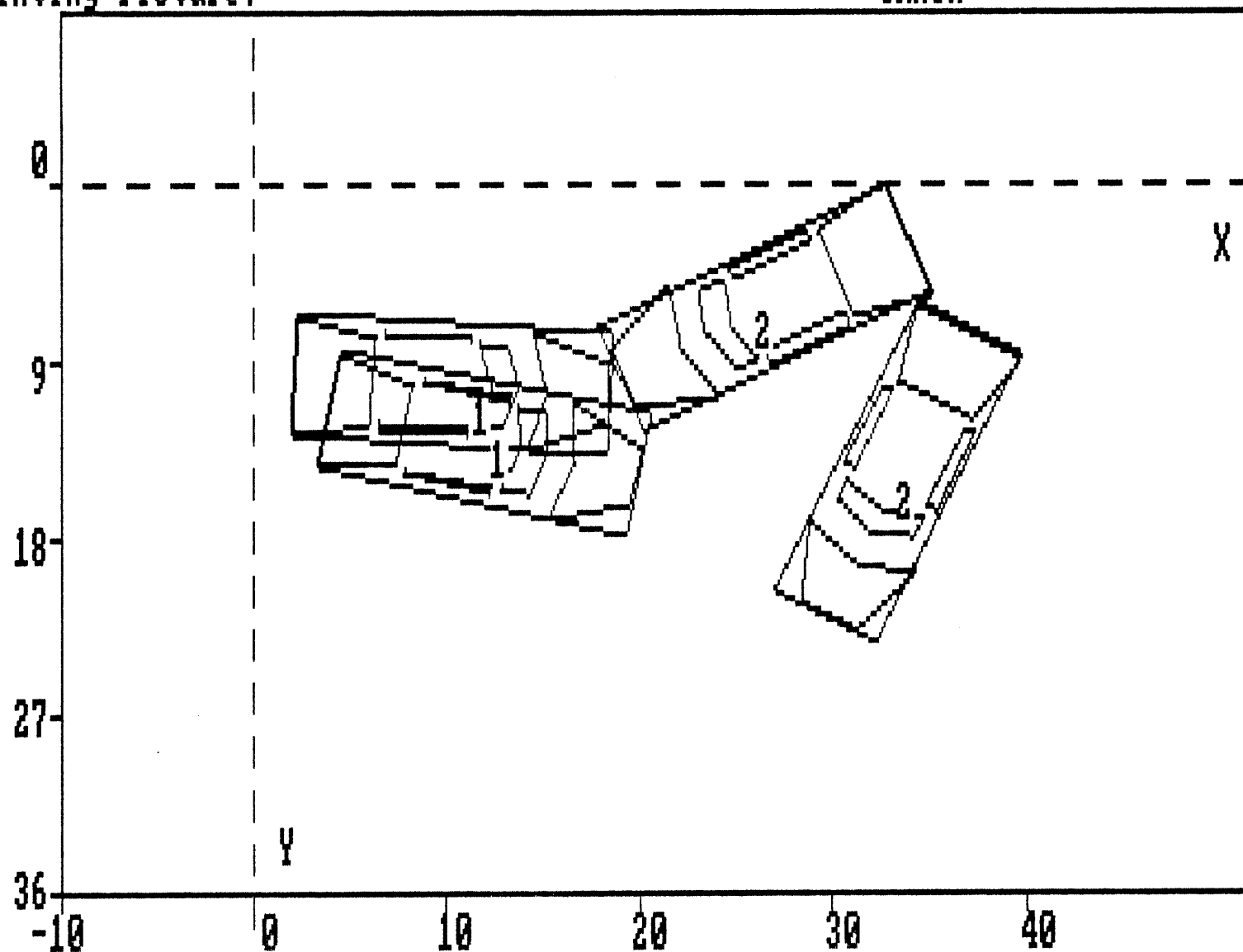
(\* INDICATES DEFAULT VALUE)  
VEHICLE # 2

TYPE-----CATEGORY 3  
 STIFFNESS---CATEGORY 3  
 WEIGHT----- 3300.0 LBS.  
 CDC-----01FDEW4  
 L----- 65.0 IN.  
 C1----- 11.6 IN.  
 C2----- 19.2 IN.  
 C3----- 26.1 IN.  
 C4----- 24.0 IN.  
 C5----- 27.4 IN.  
 C6----- 33.6 IN.  
 D----- 11.4  
 RHO----- 1.00 \*  
 ANG----- 16.8 DEG.  
 D'----- 15.2 IN.



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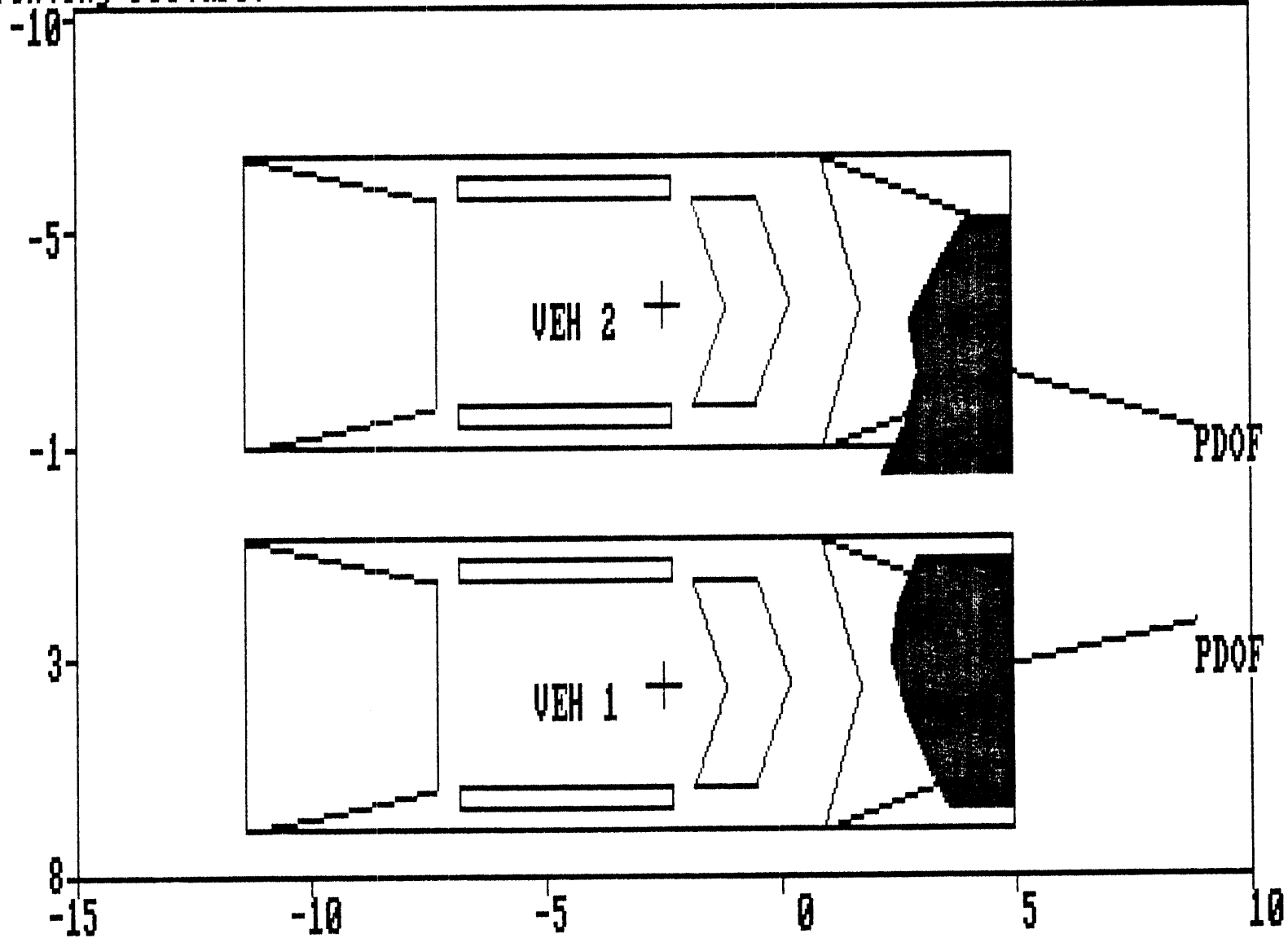
CRASH



SCENE DESCRIPTION

Printing Picture:

CRASH



DAMAGE DESCRIPTION

APPENDIX C

Air Bag Supplement

## ACCIDENT SUMMARY

ACCIDENT DATE                      / 91

POLICE INVESTIGATED (1,2,9)\*

                     COUNTY SHERIFF'S

DEPT.

City 1440 County 102

## GENERAL LOCALITY

- (1) Freeway, Limited Access
- (2) Urban (City)
- (3) Urban-Rural (mixed)
- (4) Rural, Fields

## CONFIGURATION (First Harm)

- (0) Struck Object or Pedestrian
- (1) Rear-End
- (2) Head-On
- (3) Rear-to-Rear
- (4) Angle
- (5) Sideswipe-Same Direction
- (6) Sideswipe-Opposite Direct.
- (7) NonCollision: eg Fell from Veh
- (8) Nonimpact Deployment
- (9) Unknown

## FIRE INVOLVED (0) None

- (1) AirBag Vehicle
- (2) Other Vehicle
- (3) Both Vehicles
- (9) Unknown

## NUMBER: VEHICLES INVOLVED

(8)=8 or more

## PERSONS INVOLVED

## INJURED PERSONS

## MAXIMUM AIS IN ACCIDENT

## OTHER VEHICLE: MAXIMUM AIS

PRIME/DEPLOY IMPACT w AB VEH:  
EVENT NUMBERJDC 01-FDEW-4

TOTAL DELTA-V

35.0 mph

Model Year, Make, Model, Body Type:

980 MERCURY ZEPHYR

## AIRBAG VEHICLE INSPECTION

DATE VEH. INSPECTED                      / 91

## REASON VEHICLE NOT INSPECTED

- (0) Not Required
- (1) Inspection Completed
- (2) Cannot be Located\*\*
- (3) Repaired or Destroyed\*\*
- (5) Refual or Impounded\*\*
- (7) Other\*

\*\*Specify:                     

## IMPACT DATA OBTAINED

- (0) No Data Obtained
- (1) CDC Only
- (2) Crush Profile Only
- (3) Trajectory Data Only
- (4) CDC and Crush Profile
- (5) CDC and Trajectory
- (6) Crush and Trajectory
- (7) CDC, Crush & Trajectory

## BASIS OF DELTA-V

- (0) Not Computed (Unknown Why)
- (1) CRASH - Damage Only
- (2) CRASH - Damage+Trajectory
- (3) Missing Vehicle Algorithm
- (4) Yielding Object Algorithm
- (5) Unknown Basis
- (6) One Vehicle Beyond Scope
- (7) Collision Beyond Scope
- (8) Insufficient Data

## VEHICLE HISTORY

HAS AIRBAG VEHICLE BEEN IN  
ANY PRIOR IMPACTS (1,2,9)\*HAS ANY PRIOR MAINTENANCE/SERVICE  
BEEN PERFORMED ON SYSTEM(1,2,9)\*\*Describe:                     AIRBAG VEHICLE: FLEET PLYMOUTH ACCLAIMVIN 1P3XA46MILEAGE 685DRAFT -                      / 85

\* (1)=Yes, (2)=No, (9)=Unknown

SYSTEM READINESS LAMP  
In Instrument Cluster)

PRE-IMPACT LAMP CONDITION

- (1) Functioning/ProvedOut
- (2) Inoperative
- (9) Unknown

DRIVER'S REPORT OF  
PRE-IMPACT FLASHING

- (00) No Flashing Reported
- (01) Continuous Flashing
- (02) -- >Number of Flashes
- (11)
- (12) Constant Light
- (19) Flashing, Unkn Number
- (88) Not App (system removed)
- (99) Unknown

F RIOD OF PRE-IMPACT FLASHING

- (0) No Flashing
- (1) Same Day as Impact
- (2) Prior Day
- (3) Prior Two Days
- (4) Prior Week
- (5) Prior Month
- (6) Over One Month
- (9) Unknown

POST-IMPACT LAMP CONDITION

- (1) Functioning/ProvedOut
- (2) Inoperative
- (9) Unknown

POST-IMPACT FLASHING

- 00) No Flashing
- (01) Continuous Flashing
- (02) -- >Number of Flashes
- (11)
- (12) Constant Light
- 19) Flashing, Unkn Number
- (88) Not Appl (removed)
- (99) Unknown

AIRBAG VEHICLE  
FIRST HARMFUL EVENT

13

- (01) Fire or explosion
- (02) Immersion
- (03) Gas Inhalation
- (04) Fell from vehicle
- (05) Injured in vehicle
- (06) Other noncollision (specify):
- (07) Overturn
- (08) Jackknife with intraunit damage  
Collision With:
- (09) Pedestrian
- (10) Pedalcyclist
- (11) Railway train
- (12) Animal
- (13) Motor vehicle in transport (same  
roadway)
- (14) Motor vehicle in transport (other  
roadway)
- (15) Parked motor vehicle
- (16) Other type nonmotorist (specify):
- (17) Thrown or falling object
- (18) Boulder
- Collision with Fixed Object:
- (20) Building
- (21) Impact attenuator/Crash Cushion
- (22) Bridge pier or abutment
- (23) Bridge parapet end
- (24) Bridge rail
- (25) Guardrail
- (26) Concrete traffic barrier
- (27) Median barrier
- (28) Other longitudinal barrier (specify):
- (29) Highway/Traffic sign post
- (30) Overhead sign support
- (31) Luminaire/Light support
- (32) Utility pole
- (33) Other post, pole, or support (specify):
- (34) Culvert
- (35) Curb
- (36) Ditch
- (37) Embankment-earth
- (38) Embankment-rock, stone or concrete
- (39) Fence (wooden, wire, chain link, etc.)
- (40) Wall (stone, rock, metal, etc.)
- (41) Fire hydrant
- (42) Shrubbery
- (43) Tree
- (44) Other fixed object (specify):
- (45) Pavement surface irregularity (pothole,  
grooved, grates)
- (99) Unknown

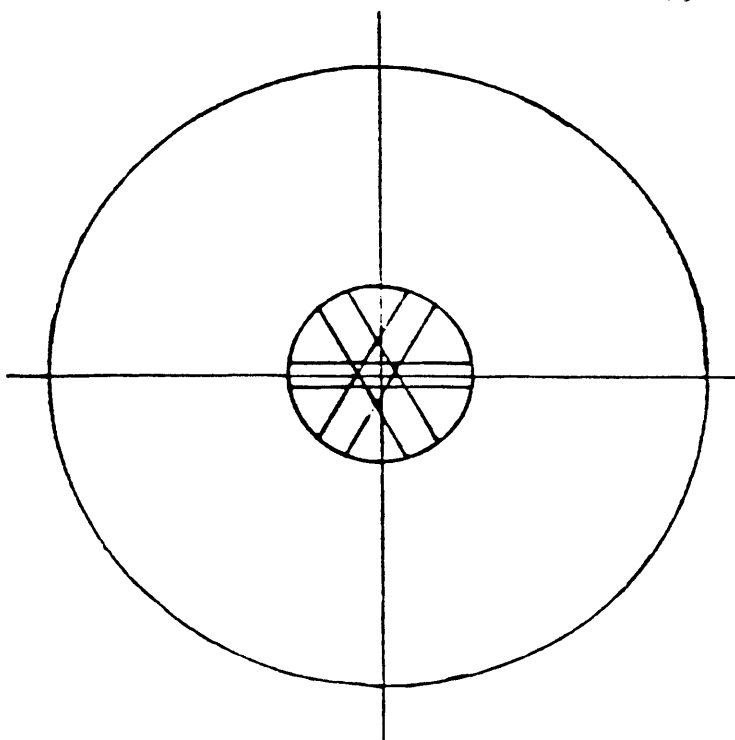


<div>AIRBAG VEHICLE IMPACT SUMMARY</div> <div>V HICLE ROLE</div> <div>(0) Non-collision ( ) Striking Unit ( ) Struck Unit (3) Both Striking and Struck ( ) Unknown</div> <div>MANNER OF LEAVING SCENE</div> <div>( ) Driven (2) Towed-due to damage (3) Towed - not for damage ( ) Towed - details unknown ( ) Abandoned (9) Unknown</div> <div>N MBER OF IMPACT EVENTS</div> <div>(8) 8 or more, (9) Unknown</div> <div>R LLOVER (0) No Rollover (1) First Event (2) Subsequent Event (3) Yes,UnknownEvent (9) Unknown</div> <div>OTERRIDE/UNDERRIDE</div> <div>(1) No over/underride (1) Override - 1st CDC ( ) - Other CDC (4) Underride - 1st CDC (6) - Other CDC ( ) Unknown</div> <div>AIRBAG VEHICLE DAMAGE</div> <div>CODES: (1) Yes, DAMAGED (2) No Damage (9) Unknown</div> <div>LEFT FRONT FENDER DAMAGE</div> <div>RIGHT FRONT FENDER DAMAGE</div> <div>CENTER TOP OF GRILLE DAMAGE</div> <div>FRONT BUMPER E.A. STATUS: Left ( ) Normal (2) Extended (3) Partial Compression ( ) Complete Compression ( ) Not Applicable (9) Unknown</div>	<div>3</div> <div>2</div> <div>1</div> <div>0</div> <div>0</div> <div>1</div> <div>1</div> <div>1</div> <div>4</div> <div>4</div>	<div>FIRST AIRBAG VEHICLE IMPACT:</div> <div>CONFIGURATION</div> <div>(0) Struck Object or Pedestrian (1) Rear-End (2) Head-On (3) Rear-to-Rear (4) Angle (5) Sideswipe - Same Direction (6) Sideswipe-Opposite Direct. (7) NonColl:eg Fell from Veh (8) NonImpact Deployment (9) Unknown</div> <div>CDC 1 1 - F D E W - 3</div> <div>OBJECT CONTACTED: 80 MERC ZEPHYR</div> <div>PRIMARY/DEPLOYMENT. IMPACT:</div> <div>EVENT NUMBER</div> <div>TOTAL DELTA-V 38.9</div> <div>LONGITUDINAL DELTA-V -38.3</div> <div>CONFIGURATION</div> <div>(0) Struck Object or Pedestrian (1) Rear-End (2) Head-On (3) Rear-to-Rear (4) Angle (5) Sideswipe - Same Direction (6) Sideswipe-Opposite Direct. (7) NonColl:eg Fell from Veh (8) NonImpact Deployment (9) Unkonwn</div> <div>CDC 1 1 - F D E W - 3</div> <div>OBJECT CONTACTED: 80 MERC ZEPHYR</div> <div>NOTES:</div>	<div>2</div> <div>1</div> <div>3 9</div> <div>03 8</div> <div>2</div>
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<b>AIRBAG SYSTEM DAMAGE</b>		<b>CONDITION OF DEPLOYED BAG</b>	<u>1</u>
CODES: (1) Yes, Damaged* (2) No, Intact (8) Not App. (Removed) (9) Unknown		(1) Bag Intact (2) Split or Torn* (3) Cut by Object in Impact* (4) Cut after Accident* (5) Other (e.g., burned)* (8) N/A (not deployed) (9) Unknown	
AIRBAG MODULE	<u>2</u>	<b>*DESCRIBE System and Bag Damage:</b>  _____ _____ _____ _____ _____ _____	
SENSORS: Left Front	<u>9</u>		
Center Front	<u>8</u>		
Right Front	<u>9</u>		
Rear, Cowl	<u>8</u>		
DIAGNOSTIC MODULE	<u>2</u>		
WIRING	<u>2</u>		
KNEE DIVERter	<u>1</u>		
INDICATION OF DISCONNECTED OR LOOSE ELECTRICAL CONNECTORS	<u>2</u>		

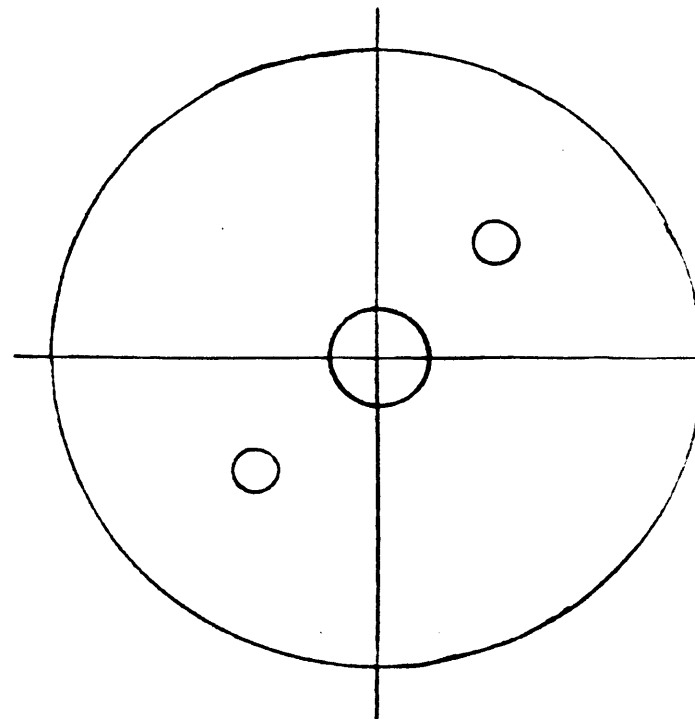
NOTE DAMAGE AND CONTACT MARKS ON AIRBAG DIAGRAMS BELOW:

NO CONTACT EVIDENCE  
ON AIR BAG



FRONT

TOP



BOTTOM

BACK

## OCCUPANTS of AIRBAG CAR

## NOTES:

NUMBER OF OCCUPANTS IN VEHICLE  
(8) 8 or more1

NUMBER OF INJURED PERSONS

1

MAXIMUM AIS IN AIRBAG VEHICLE

3

(0) No Injury

(1-6) AIS Severity

(7) Injured, Unknown Severity

(9) Unknown

DRIVER AGE 49 SEX MALE

NUMBER OF DRIVER INJURIES

8

SOURCE OF BEST INJURY DATA

7

(0) Not Injured

(1) Autopsy w/wo med. records

(2) Hospital Medical Records

(3) Emergency Room only

(4) Private physician, Clinic

(5) Lay Coroner Report

(6) EMS Personnel

(7) Interviewee

(8) Police

(9) Unknown

## MAXIMUM AIS BY BODY REGION

REGION	MAX AIS	CONTACT
Head/Neck/Face	<u>1</u>	<u>45</u>
Chest	<u>3</u>	<u>41/06</u>
Abdomen	<u>   </u>	<u>   </u>
Leg/Hips	<u>2</u>	<u>13/09</u>
Other (Arms)	<u>2</u>	<u>09/10</u>
DRIVER MAXIMUM	<u>3</u>	<u>41/06</u>

EJECTION: Extent NONEPortal N/A

**DRIVER BELT USAGE:** (1) Used (2) Not Used (9) Unknown 1

Evidence: D-RING TRANSFER ON BELT WEBBING, ABRASIONS ON  
PLASTIC GUARD OVER RECLINE ASSEMBLY

**DRIVER POSTURE:** Any Comments Recorded (1) Yes, (2) No 1

Describe driver's posture and position on seat including specific comments on head, torso, buttocks, legs and feet. Also note hand and arm position. Did driver brace before crash? Describe:

NORMAL UPRIGHT POSITION, BOTH HANDS BRACING AGAINST  
STEERING WHEEL, RIGHT FOOT FIRMLY AGAINST BRAKE PEDAL

**DRIVER FOREIGN OBJECTS:** Comments Recorded (1) Yes, (2) No 1

Was driver wearing contact lenses or eyeglasses? Or holding any foreign object at the time of the impact (packages on lap, pipe, food, bottle, cigarette, etc.)? Did any lenses, objects, or jewelry play any role?:

PRESCRIPTION EYEGLASSES SEPARATED FROM FACE, LENS POPPED  
OUT OF FRAMES

**DRIVER COMMENTS:** Comments Recorded (1) Yes, (2) No 1

Was the driver aware that the vehicle was equipped with a supplemental restraint system? Did driver offer any comments on smoke, noise, etc.? Did the driver comment on the airbag as a restraint system? Describe:

DRIVER SAW SILVER OR GRAY OBJECT, THEN IT DISAPPEARED.  
HE THOUGHT IT WAS THE AIR BAG.

**PASSENGER-AIRBAG CONTACT** (1) Yes, (2) No, (9) Unknown 2

Describe: NO PASSENGER

APPENDIX D

NASS Vehicle Forms






# GENERAL VEHICLE FORM

1. Primary Sampling Unit Number
2. Case Number —Stratum— 91-14
3. Vehicle Number 01

## VEHICLE IDENTIFICATION

4. Vehicle Model Year 92  
Code the last two digits of the model year  
(99) Unknown
5. Vehicle Make (specify): 09  
PLYMOUTH  
Applicable codes are found in your  
NASS CDS Data Collection, Coding, and  
Editing Manual.  
(99) Unknown
6. Vehicle Model (specify): 019  
ACCLAIM  
Applicable codes are found in your  
NASS CDS Data Collection, Coding, and  
Editing Manual.  
(999) Unknown
7. Body Type 04  
Note: Applicable codes are found on  
the back of this page.
8. Vehicle Identification Number  
1P3XA46K2NE   
Left justify; Slash zeros and letter Z (0 and Z)  
No VIN — Code all zeros  
Unknown — Code all nine's

## OFFICIAL RECORDS

9. Police Reported Vehicle Disposition 1  
(0) Not towed due to vehicle damage  
(1) Towed due to vehicle damage  
(9) Unknown
10. Police Reported Travel Speed 58  
Code to the nearest mph (NOTE: 00 means  
less than 0.5 mph)  
(97) 96.5 mph and above 55-60  
(99) Unknown

11. Police Reported Alcohol Presence 0

(0) No alcohol present  
(1) Yes (alcohol present)  
(7) Not reported  
(8) No driver present  
(9) Unknown

Note: See variables 37 through 55  
(Page 4) for Information on Other Drugs

12. Alcohol Test Result for Driver 96  
Code actual value (decimal implied before  
first digit—0.xx)  
(95) Test refused  
(96) None given  
(97) AC test performed, results unknown  
(98) No driver present  
(99) Unknown

Source                     

## ACCIDENT RELATED

13. Speed Limit 55  
(00) No statutory limit  
Code posted or statutory speed limit  
(99) Unknown
14. Attempted Avoidance Maneuver 03  
(00) No impact  
(01) No avoidance actions  
(02) Braking (no lockup)  
(03) Braking (lockup)  
(04) Braking (lockup unknown)  
(05) Releasing brakes  
(06) Steering left  
(07) Steering right  
(08) Braking and steering left  
(09) Braking and steering right  
(10) Accelerating  
(11) Accelerating and steering left  
(12) Accelerating and steering right  
(97) No driver present  
(98) Other action (specify):  
                                      
(99) Unknown
15. Accident Type 51  
Applicable codes may be found on the back  
of page two of this field form  
(00) No impact  
Code the number of the diagram that  
best describes the accident circumstance  
(98) Other accident type (specify):  
                                      
(99) Unknown

\*\*\*\* SKIP TO VARIABLE GV37 IF GV07 DOES NOT EQUAL 01-49 \*\*\*\*

## CODES FOR BODY TYPE

### CDS APPLICABLE VEHICLES

#### Automobiles

- (01) Convertible (excludes sun-roof, t-bar)
- (02) 2-door sedan, hardtop, coupe
- (03) 3-door/2-door hatchback
- (04) 4-door sedan, hardtop
- (05) 5-door/4-door hatchback
- (06) Station wagon (excluding van and truck based)
- (08) Other automobile type (specify):

---

(09) Unknown automobile type

#### Automobile Derivatives

- (10) Auto based pickup (includes El Camino, Caballero, Ranchero, and Brat)
- (11) Auto based panel (cargo station wagon, includes auto based ambulance/hearse)
- (12) Large limousine—more than four side doors or stretched chassis

#### Utility Vehicles

- (13) Short utility—not truck based (includes Jeep CJ-5, Jeep CJ-7, Renegade, Landrover, Pre-78 Bronco, Landcruiser, Thing)
- (14) Truck based utility (2-door; includes Blazer, Bronco—78 on, Bronco II, Jimmy, Ramcharger, Cherokee, Trailduster, Scout)

#### Van Based Light Trucks ( $\leq 10,000$ lbs GVWR)

- (20) Minivan (Lumina APV, Astro, Caravan, Plymouth Vista, Aerostar, Safari, Voyager [84 and after], Dodge Vista, Mini Ram Van, Toyota Cargo Van, Toyota Van, Vanagon, VW Bus, Kombi)
- (21) Standard van (Sportvan, Chevy Van, Club Wagon, Ford Econoline, Ram Van, Chateau, Ram Wagon, Vandura, Rally, Voyager [83 and before], Beauville, Sportsman)
- (28) Other van type (Hi-Cube Van, Kary) (specify):

---

(29) Unknown van type

#### Light Conventional Trucks (Pickup Style Cab, $\leq 10,000$ lbs GVWR)

- (30) Compact pickup ( $<4,500$  lbs. GVWR, S-10, LUV, Ram 50, Rampage, Courier, Ranger, S-15 Pup, Mazda Pickup, Mitsubishi Truck, Nissan Pickup, Arrow Pickup, Scamp, Toyota Pickup, VW Pickup)
- (31) Standard pickup (4,500 to 10,000 lbs. GVWR, C10 - C30, K10 - K30, T10, D100 - D350, W150 - W350, F100 - F350, Comanche, J10 - J30, Dakota)
- (32) Pickup with slide-in camper
- (33) Truck based station wagon (4-door; includes Suburban, Travelall, Wagoneer)
- (34) Light truck based suburban limousine
- (35) Convertible pickup
- (39) Unknown (pickup style) light conventional truck type

#### Other Light Trucks ( $\leq 10,000$ lbs GVWR)

- (40) Cab chassis based (includes rescue vehicle, light stake, dump, and tow truck)
  - (41) Truck based panel
  - (42) Light truck based motorhome (chassis mounted)
  - (47) Other light conventional truck type (not a pickup—includes step vans  $\leq 10,000$  lbs GVWR, Grumman LLV vehicle) (specify):
- 
- (48) Unknown other light truck type (not a pickup)
  - (49) Unknown light vehicle type (automobile, van, or light truck)

### OTHER VEHICLES

#### Buses (Excludes Van Based)

- (50) School bus (designed to carry students, not cross country or transit)
- (58) Other bus type (e.g., transit, intercity, bus based motorhome) (specify):

---

(59) Unknown bus type

#### Medium/Heavy Trucks ( $>10,000$ lbs GVWR)

- (60) Step van
- (61) Single unit straight truck (10,000 lbs  $<$  GVWR  $\leq 26,000$  lbs)
- (62) Single unit straight truck ( $>26,000$  lbs GVWR)
- (63) Medium/heavy truck based motorhome
- (64) Truck-tractor with no cargo trailer
- (65) Truck-tractor pulling one trailer
- (66) Truck-tractor pulling two or more trailers
- (67) Truck-tractor (unknown if pulling trailer)
- (68) Unknown medium/heavy truck type
- (69) Unknown truck type (light/medium/heavy)

#### Motored Cycles (Does Not Include All-Terrain Vehicles/Cycles)

- (70) Motorcycle
- (71) Moped (motorized bicycle)
- (78) Other motored cycle type (minibike, motorscooter) (specify):

---

(79) Unknown motored cycle type

#### Other Vehicles

- (80) ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)
- (88) Other vehicle type (specify):

---

(99) Unknown body type

**OCCUPANT RELATED**

16. Driver Presence in Vehicle 1  
 (0) Driver not present  
 (1) Driver present  
 (9) Unknown
17. Number of Occupants This Vehicle 01  
 (00-96) Code actual number of occupants for this vehicle  
 (97) 97 or more  
 (99) Unknown
18. Number of Occupant Forms Submitted 01

**VEHICLE WEIGHT ITEMS**

19. Vehicle Curb Weight 02,800  
2794 Code weight to nearest 100 pounds.  
 (010) Less than 1050 pounds  
 (135) 13,500 lbs or more  
 (999) Unknown  
 Source: MVMA SPECS
20. Vehicle Cargo Weight 0000  
None Code weight to nearest 100 pounds.  
 (00) Less than 50 pounds  
 (97) 9,650 lbs or more  
 (99) Unknown

**RECONSTRUCTION DATA**

21. Towed Trailing Unit 0  
 (0) No towed unit  
 (1) Yes – towed trailing unit  
 (9) Unknown
22. Documentation of Trajectory Data for This Vehicle 1  
 (0) No  
 (1) Yes
23. Post Collision Condition of Tree or Pole (for Highest Delta V) 0  
 (0) Not collision (for highest delta V) with tree or pole  
 (1) Not damaged  
 (2) Cracked/sheared  
 (3) Tilted <45 degrees  
 (4) Tilted ≥45 degrees  
 (5) Uprooted tree  
 (6) Separated pole from base  
 (7) Pole replaced  
 (8) Other (specify):  
 \_\_\_\_\_  
 (9) Unknown

24. Rollover 0  
 (0) No rollover (no overturning)  
 Rollover (primarily about the longitudinal axis)  
 (1) Rollover, 1 quarter turn only  
 (2) Rollover, 2 quarter turns  
 (3) Rollover, 3 quarter turns  
 (4) Rollover, 4 or more quarter turns (specify):  
 \_\_\_\_\_  
 (5) Rollover – end-over-end (i.e., primarily about the lateral axis)  
 (9) Rollover (overturn), details unknown

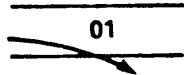

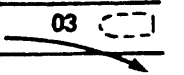
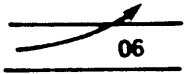
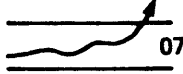
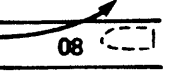
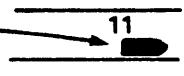
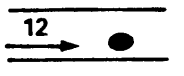
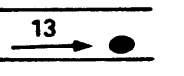
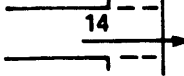
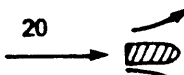

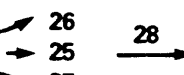
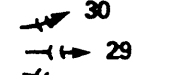
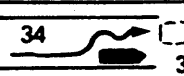
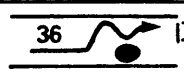
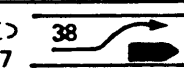
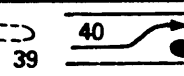
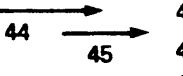
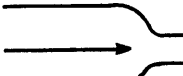


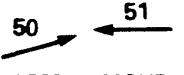


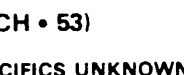

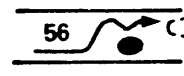
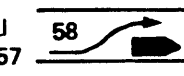
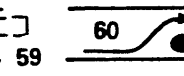
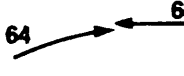


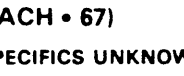
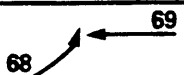
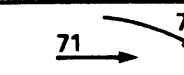
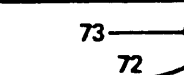

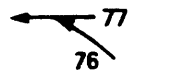
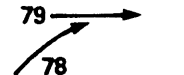
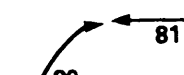
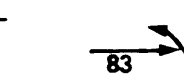
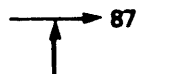
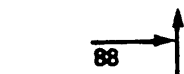

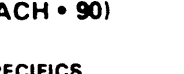
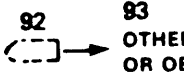



**OVERRIDE/UNDERRIDE (THIS VEHICLE)**

25. Front Override/Underride (this vehicle) 0
26. Rear Override/Underride (this vehicle) 0  
 (0) No override/underride, or not an end-to-end impact  
 Override (see specific CDC)  
 (1) 1st CDC  
 (2) 2nd CDC  
 (3) Other not automated CDC (specify):  
 \_\_\_\_\_  
 Underride (see specific CDC)  
 (4) 1st CDC  
 (5) 2nd CDC  
 (6) Other not automated CDC (specify):  
 \_\_\_\_\_  
 (7) Medium/heavy truck or bus override  
 (9) Unknown

**HEADING ANGLE AT IMPACT FOR HIGHEST DELTA V**

Values: (000)-(359) Code actual value  
 (997) Noncollision  
 (998) Impact with object  
 (999) Unknown

27. Heading Angle for This Vehicle 008
28. Heading Angle for Other Vehicle 160

Category	Configuration	ACCIDENT TYPES (Includes Intent)				
I. Single Driver	A. Right Roadside Departure	 01 DRIVE OFF ROAD	 02 CONTROL/ TRACTION LOSS	 03 AVOID COLLISION WITH VEH., PED., ANIM.	04 SPECIFICS OTHER	05 SPECIFICS UNKNOWN
	B. Left Roadside Departure	 06 DRIVE OFF ROAD	 07 CONTROL/ TRACTION LOSS	 08 AVOID COLLISION WITH VEH., PED., ANIM.	09 SPECIFICS OTHER	10 SPECIFICS UNKNOWN
	C. Forward Impact	 11 PARKED VEH.	 12 STA. OBJECT	 13 PEDESTRIAN/ ANIMAL	 14 END DEPARTURE	15 SPECIFICS OTHER 16 SPECIFICS UNKNOWN
II. Same Trafficway Same Direction	D. Rear-End	 20 STOPPED 21, 22, 23	 22 SLOWER 25, 26, 27	 24 DECEL. 29, 30, 31	 26 AVOID COLLISION WITH VEH.	(EACH • 32) SPECIFICS OTHER (EACH • 33) SPECIFICS UNKNOWN
	E. Forward Impact	 34 CONTROL/ TRACTION LOSS	 36 CONTROL/ TRACTION LOSS	 38 AVOID COLLISION WITH VEH.	 40 AVOID COLLISION WITH OBJECT	(EACH • 42) SPECIFICS OTHER (EACH • 43) SPECIFICS UNKNOWN
	F. Sideswipe Angle	 44 LATERAL MOVE	 46 SPECIFICS OTHER	 48 SPECIFICS UNKNOWN	 49 SPECIFICS UNKNOWN	(EACH • 48) SPECIFICS OTHER (EACH • 49) SPECIFICS UNKNOWN
III. Same Trafficway Opposite Direction	G. Head-On	 50 LATERAL MOVE	 51 SPECIFICS OTHER	 52 SPECIFICS UNKNOWN	 53 SPECIFICS UNKNOWN	(EACH • 52) SPECIFICS OTHER (EACH • 53) SPECIFICS UNKNOWN
	H. Forward Impact	 54 CONTROL/ TRACTION LOSS	 56 CONTROL/ TRACTION LOSS	 58 AVOID COLLISION WITH VEH.	 60 AVOID COLLISION WITH OBJECT	(EACH • 62) SPECIFICS OTHER (EACH • 63) SPECIFICS UNKNOWN
	I. Sideswipe Angle	 64 LATERAL MOVE	 65 SPECIFICS OTHER	 66 SPECIFICS UNKNOWN	 67 SPECIFICS UNKNOWN	(EACH • 66) SPECIFICS OTHER (EACH • 67) SPECIFICS UNKNOWN
IV. Change Trafficway Vehicle Turning	J. Turn Across Path	 68 INITIAL OPPOSITE DIRECTIONS	 70 INITIAL SAME DIRECTIONS	 72 SPECIFICS OTHER	 74 SPECIFICS UNKNOWN	(EACH • 74) SPECIFICS OTHER (EACH • 75) SPECIFICS UNKNOWN
	K. Turn Into Path	 76 TURN INTO SAME DIRECTION	 78 TURN INTO SAME DIRECTION	 80 TURN INTO OPPOSITE DIRECTIONS	 82 SPECIFICS OTHER	(EACH • 84) SPECIFICS OTHER (EACH • 85) SPECIFICS UNKNOWN
V. Intersecting Paths (Vehicle Damage)	L. Straight Paths	 86 SPECIFICS OTHER	 88 SPECIFICS UNKNOWN	 90 SPECIFICS UNKNOWN	 91 SPECIFICS UNKNOWN	(EACH • 90) SPECIFICS OTHER (EACH • 91) SPECIFICS UNKNOWN
VI. Miscellaneous	M. Backing Etc.	 92 BACKING VEH.	 93 OTHER VEH. OR OBJECT	 98 Other Accident Type	 99 Unknown Accident Type	98 Other Accident Type 99 Unknown Accident Type 00 No Impact

## 29. Basis for Total Delta V (Highest)

2

## Delta V Calculated

- (1) CRASH program – damage only routine
- (2) CRASH program – damage and trajectory routine
- (3) Missing vehicle algorithm

## Delta V Not Calculated

- (4) At least one vehicle (which may be this vehicle) is beyond the scope of an acceptable reconstruction program, regardless of collision conditions.
- (5) All vehicles within scope (CDC applicable) of CRASH program but one of the collision conditions is beyond the scope of the CRASH program or other acceptable reconstruction techniques, regardless of adequacy of damage data.
- (6) All vehicles and collision conditions are within scope of one of the acceptable reconstruction programs, but there is insufficient data available.

**COMPUTER GENERATED DELTA V**

## 30. Total Delta V

Secondary Highest

3938.9 Nearest mph

(NOTE: 00 means less than  
0.5 mph)  
(97) 96.5 mph and above  
(99) Unknown

## 31. Longitudinal Component of Delta V

+ 3838.3 Nearest mph

(NOTE: —00 means greater than  
– 0.5 and less than +0.5 mph)  
(± 97) ± 96.5 mph and above  
(— 99) Unknown

Secondary Highest

## 32. Lateral Component of Delta V

076.65 Nearest mph

(NOTE: —00 means greater than  
– 0.5 and less than +0.5 mph)  
(± 97) ± 96.5 mph and above  
(— 99) Unknown

## 33. Energy Absorption

136,500136,544.7 Nearest 100 foot-lbs

(NOTE: 0000 means less than 50 Foot-Lbs)  
(9997) 999,650 foot-lbs or more  
(9999) Unknown

## 34. Confidence in Reconstruction Program Results (for Highest Delta V)

1

- (0) No reconstruction
- (1) Collision fits model – results appear reasonable
- (2) Collision fits model – results appear high
- (3) Collision fits model – results appear low
- (4) Borderline reconstruction – results appear reasonable

## 35. Type of Vehicle Inspection

1

- (0) No Inspection
- (1) Complete inspection
- (2) Partial inspection (specify):

## 36. Is this an AOPS Vehicle?

1

- (0) No
- (1) Yes

**IS OLDMISS APPLICABLE FOR THIS VEHICLE? [ ] YES [ ☒ ] NO**  
**IF YES: IS A COMPLETED OLDMISS PROGRAM SUMMARY INCLUDED? [ ] YES [ ] NO**



37. Police Reported Other Drug Presence 0
- (0) No other drugs present
  - (1) Yes (other drug present)
  - (7) Not reported
  - (8) No driver present
  - (9) Unknown

38. Police Reported Observation/Perception Test Type For Driver 0
- (0) No observation/perception test given
  - (1) Drug recognition technician (DRT) determination
  - (2) Behavioral
  - (3) Other physical observation/perception determination (specify):  
\_\_\_\_\_
  - (7) Other observation/perception test
  - (8) No driver present

39. Other Drug Specimen Test Type For Driver 0
- (0) No specimen test given
  - (1) Blood test
  - (2) Urine test
  - (3) Other specimen tests (specify):  
\_\_\_\_\_
  - (7) Unspecified specimen test
  - (8) No driver present
  - (9) Unknown if specimen test given

**OTHER DRUGS TEST RESULTS FOR DRIVER**

	Observation/ Perception Test Results	Specimen Test Results
Narcotic Drug	40. <u>0</u>	41. <u>0</u>
Depressant Drug	42. <u>0</u>	43. <u>0</u>
Stimulant Drug	44. <u>0</u>	45. <u>0</u>
Hallucinogen Drug	46. <u>0</u>	47. <u>0</u>
Cannabinoid Drug	48. <u>0</u>	49. <u>0</u>
Phencyclidine (PCP) Drug	50. <u>0</u>	51. <u>0</u>
Inhalant Drug	52. <u>0</u>	53. <u>0</u>
Other Drug (Excluding Nicotine, Aspirin, Alcohol, Drugs Administered Post-Crash)	54. <u>0</u>	55. <u>0</u>

**Codes For Observation/Perception Test Results**

- (0) No observation/perception test given
- (1) Passed observation/perception test
- (2) Failed observation/perception test
- (3) Observation/perception test given—  
results unknown
- (8) No driver present
- (9) Unknown if observation/perception  
test given

**Codes for Specimen Test Results**

- (0) No specimen test given
- (1) Drug not found in specimen
- (2) Drug found in specimen
- (8) No driver present
- (9) Unknown if specimen test given

**\*\*\* IF THE CDS APPLICABLE VEHICLE WAS NOT INSPECTED (I.E., GV35 = 0), \*\*\*  
DO NOT COMPLETE THE EXTERIOR AND INTERIOR VEHICLE FORMS**

**\*\*\* IF GV07 DOES NOT EQUAL 01-49, DO NOT COMPLETE \*\*\*  
THE EXTERIOR VEHICLE, INTERIOR VEHICLE,  
OCCUPANT ASSESSMENT, AND OCCUPANT INJURY FORMS.**

## EXTERIOR VEHICLE FORM

NATIONAL ACCIDENT SAMPLING SYSTEM  
CRASHWORTHINESS DATA SYSTEM

1. Primary Sampling Unit Number	_____	3. Vehicle Number	<u>01</u>
2. Case Number – Stratum	<u>91-14</u>		

VIN 1P3XA46K2NF [REDACTED] Model Year 1992  
Vehicle Make (specify): PLYMOUTH Vehicle Model (specify): ACCLAIM

Locate the end of the damage with respect to the vehicle longitudinal center line or bumper corner for end impacts or an undamaged axle for side impacts.

Specific Impact No.	Location of Direct Damage	Location of Field L
1	FULL FRONTAL - 50.5", CORNER -	FULL FRONTAL 49.75"
	TO CORNER (MEASURED PARALLEL	MEASURED PARALLEL TO
	TO DAMAGE PROFILE)	REFERENCE LINE

NOTES: Identify the plane at which the C-measurements are taken (e.g., at bumper, above bumper, at sill, above sill, etc.) and label adjustments (e.g., free space).

Measure C1 to C6 from driver to passenger side in front or rear impacts and rear to front in side impacts.

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

Use as many lines/columns as necessary to describe each damage profile.

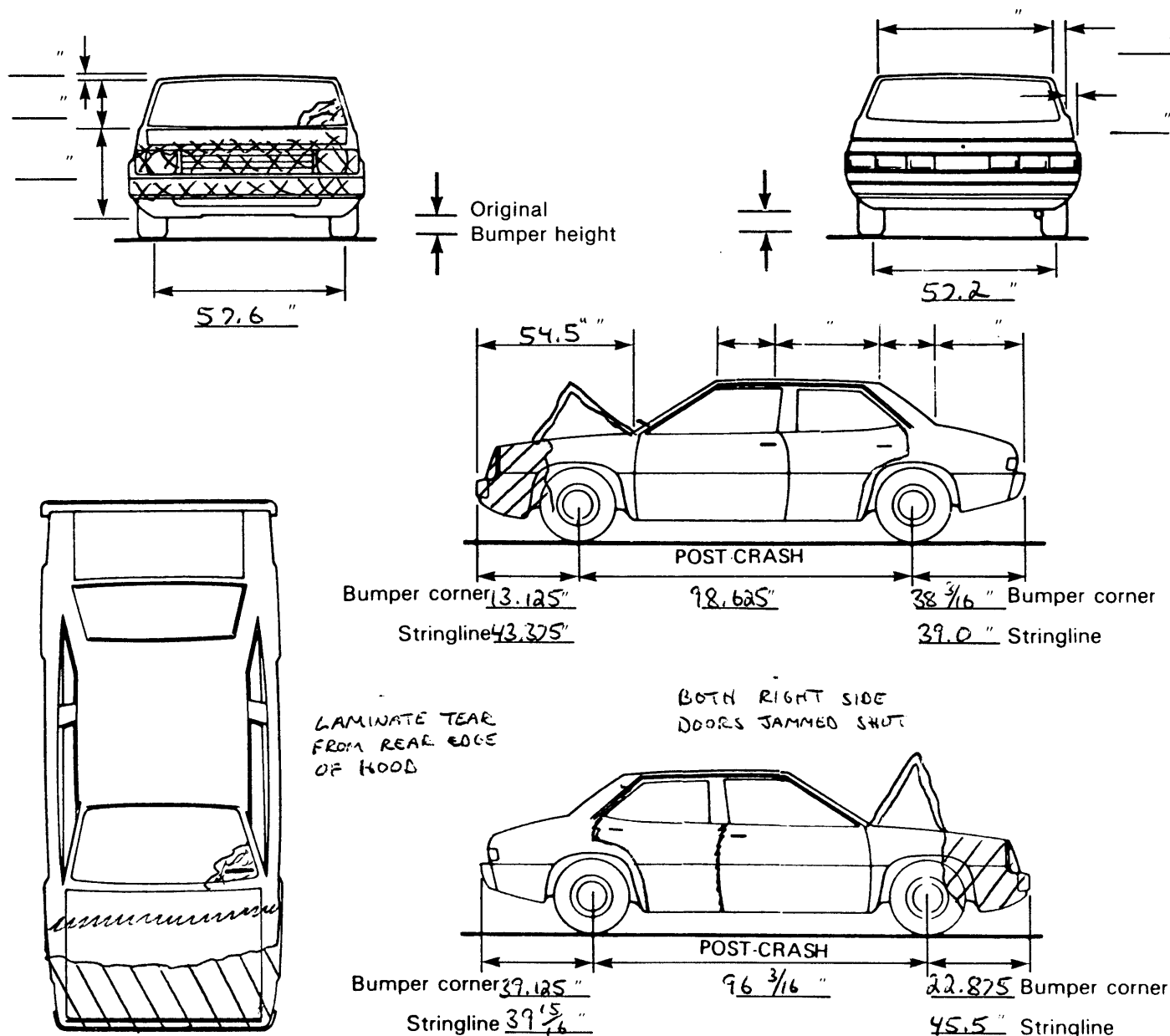
[illegible]

## National Accident Sampling System—Crashworthiness Data System: Exterior Vehicle Form

Page 2

## VEHICLE DAMAGE SKETCH

<b>TIRE—WHEEL DAMAGE</b> a. Rotation physically restricted RF <u>1</u> LF <u>2</u> RR <u>2</u> LR <u>2</u> (1) Yes (2) No (8) NA (9) Unk.		<b>ORIGINAL SPECIFICATIONS</b> Wheelbase <u>103.3"</u> Overall Length <u>181.2"</u> Maximum Width <u>68.1"</u> Curb Weight <u>2794</u> Average Track <u>52.4</u> Front Overhang _____ Rear Overhang _____ Engine Size: cyl./ displ. <u>4 cyl. 2.5L</u> Undeformed End Width <u>62.0"</u>		<b>WHEEL STEER ANGLES</b> (For locked front wheels or displaced rear axles only) RF $\pm$ _____° LF $\pm$ _____° RR $\pm$ _____° LR $\pm$ _____° Within $\pm 5$ degrees	
<b>TYPE OF TRANSMISSION</b> <input type="checkbox"/> Manual <input checked="" type="checkbox"/> <u>3-SPEED</u> Automatic				<b>DRIVE WHEELS</b> <input checked="" type="checkbox"/> FWD <input type="checkbox"/> RWD <input type="checkbox"/> 4WD	
				Approximate Cargo Weight <u>N/A</u>	



NOTES Sketch new perimeter and cross hatch direct damage and single hatch induced damage on all views. Annotate observations which might be useful in reconstructing the accident (e.g., grass in tire bead, direction of striations, scuff on sidewall, etc.). If pulling trailer, sketch type of trailer and damage received on the back of this page.

Annotate any damage caused by extrication such as component removal by torching, prying, or hydraulic shears

## CDC WORKSHEET

## CODES FOR OBJECT CONTACTED

01-30—Vehicle Number

Noncollision

(31) Overturn—rollover

(32) Fire or explosion

(33) Jackknife

(34) Other intraunit damage (specify):

(35) Noncollision injury

(38) Other noncollision (specify):

(39) Noncollision—details unknown

Collision with Fixed Object

(41) Tree ( $\leq 4$  inches in diameter)(42) Tree ( $> 4$  inches in diameter)

(43) Shrubbery or bush

(44) Embankment

(45) Breakaway pole or post (any diameter)

Nonbreakaway Pole or Post

(50) Pole or post ( $\leq 4$  inches in diameter)(51) Pole or post ( $> 4$  but  $\leq 12$  inches in diameter)(52) Pole or post ( $> 12$  inches in diameter)

(53) Pole or post (diameter unknown)

(54) Concrete traffic barrier

(55) Impact attenuator

(56) Other traffic barrier (specify):

(57) Fence

(58) Wall

(59) Building

(60) Ditch or Culvert

(61) Ground

(62) Fire hydrant

(63) Curb

(64) Bridge

(68) Other fixed object (specify):

(69) Unknown fixed object

Collision With Nonfixed Object

(71) Motor vehicle not in transport

(72) Pedestrian

(73) Cyclist or cycle

(74) Other nonmotorist or conveyance (specify):

(75) Vehicle occupant

(76) Animal

(77) Train

(78) Trailer, disconnected in transport

(88) Other nonfixed object (specify):

(89) Unknown nonfixed object

(98) Other event (specify):

(99) Unknown event or object

## DEFORMATION CLASSIFICATION BY EVENT NUMBER

Accident Event Sequence Number	Object Contacted	(1) (2) Direction of Force (degrees)	Incremental Value of Shift	(3) Deformation Location	(4) Specific Longitudinal or Lateral Location	(5) Specific Vertical or Lateral Location	(6) Type of Damage Distribution	(7) Deformation Extent
01	02	-015	00	F	D	E	W	03
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

## National Accident Sampling System – Crashworthiness Data System: Exterior Vehicle Form

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**COLLISION DEFORMATION CLASSIFICATION**

## HIGHEST DELTA "V"

Accident Event Sequence Number	Object Contacted	(1) (2) Direction of Force	(3) Deformation Location	(4) Specific Longitudinal or Lateral Location	(5) Specific Vertical or Lateral Location	(6) Type of Damage Distribution	(7) Deformation Extent
4. <u>01</u>	5. <u>Q2</u>	6. <u>LL</u>	7. <u>F</u>	8. <u>D</u>	9. <u>E</u>	10. <u>W</u>	11. <u>03</u>

## Second Highest Delta "V"

12. <u>   </u>	13. <u>   </u>	14. <u>   </u>	15. <u>   </u>	16. <u>   </u>	17. <u>   </u>	18. <u>   </u>	19. <u>   </u>
----------------	----------------	----------------	----------------	----------------	----------------	----------------	----------------

**CRUSH PROFILE**

(The crush profile for the damage described in the CDC(s) above should be documented in the appropriate space below. ALL MEASUREMENTS ARE IN INCHES.)

## HIGHEST DELTA "V"

20. L	21. C1	C2	C3	C4	C5	C6	22. + - D
<u>050</u>	<u>25</u>	<u>30</u>	<u>31</u>	<u>28</u>	<u>24</u>	<u>17</u>	<u>000</u>

## Second Highest Delta "V"

23. L	24. C1	C2	C3	C4	C5	C6	25. + - D
<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>	<u>   </u>

26. Are CDCs Documented but Not Coded on The Automated File?

- (0) No  
(1) Yes

0

27. Researcher's Assessment of Vehicle Disposition

- (0) Not towed due to vehicle damage  
(1) Towed due to vehicle damage  
(9) Unknown

1

28. Original Wheelbase

Code to the nearest tenth of an inch  
(9999) Unknown

103.3



## National Accident Sampling System-Crashworthiness Data System: Exterior Vehicle Form

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29. Is This A Multi-Stage Manufactured Vehicle  
And/Or A Certified Altered Vehicle?

0

(0) No post manufacturer modifications

(1) Yes - post manufacturer modifications

(specify): \_\_\_\_\_

\_\_\_\_\_

(Include photograph of CERTIFICATION  
PLACARD in case report)

(9) Unknown if vehicle is modified

30. Fire Occurrence

0

(0) No fire

Yes, fire occurred

(1) Minor

(2) Major

(9) Unknown

31. Origin of Fire

0

(0) No fire

(1) Vehicle exterior (front, side, back, top)

(2) Exhaust system

(3) Fuel tank (and other fuel retention  
system parts)

(4) Engine compartment

(5) Cargo/trunk compartment

(6) Instrument panel

(7) Passenger compartment area

(8) Other location (specify): \_\_\_\_\_

(9) Unknown

32. Type of Fuel Tank

1

(0) No fuel tank (electrical vehicle)

(1) Metallic

(2) Non-metallic

(9) Unknown

\*\*\* STOP: IF THE CDS APPLICABLE VEHICLE WAS NOT TOWED \*\*\*  
(I.E., GV09 = 0 OR 9), DO NOT COMPLETE THE INTERIOR VEHICLE FORM.



U.S. Department of Transportation  
National Highway Traffic Safety  
Administration

# INTERIOR VEHICLE FORM

NATIONAL ACCIDENT SAMPLING SYSTEM  
CRASHWORTHINESS DATA SYSTEM

1. Primary Sampling Unit Number     

2. Case Number — ~~Stratum~~ 91-14

3. Vehicle Number 01

## INTEGRITY

4. Passenger Compartment Integrity 00

(00) No integrity loss

Yes, Integrity Was Lost Through

(01) Windshield

(02) Door (side)

(03) Door/hatch (back door)

(04) Roof

(05) Roof glass

(06) Side window

(07) Rear window (backlight)

(08) Roof and roof glass

(09) Windshield and door (side)

(10) Windshield and roof

(11) Side and rear window (side window and backlight)

(12) Windshield and side window

(13) Door and side window

(98) Other combination of above (specify):

(99) Unknown

## Door, Tailgate Or Hatch Opening

5. LF 1 6. RF 3 7. LR 1 8. RR 3 9. TG/H 0

(0) No door/gate/hatch

(1) Door/gate/hatch remained closed and operational

(2) Door/gate/hatch came open during collision

(3) Door/gate/hatch jammed shut

(8) Other (specify):

(9) Unknown

## Damage/Failure Associated with Door, Tailgate or Hatch Opening in Collision. If IV05-IV09 ≠ 2, Then Code 0.

10. LF 0 11. RF 0 12. LR 0 13. RR 0 14. TG/H 0

(0) No door/gate/hatch or door not opened

Door, Tailgate, or Hatch Came Open During Collision

(1) Door operational (no damage)

(2) Latch/striker failure due to damage

(3) Hinge failure due to damage

(4) Door structure failure due to damage

(5) Door support (i.e., pillar, sill, roof side rail, etc.) failure due to damage

(6) Latch/striker and hinge failure due to damage

(8) Other failure (specify):

(9) Unknown

## GLAZING

### Glazing Damage from Impact Forces

15. WS 2 16. LF 0 17. RF 0 18. LR 0 19. RR 0

20. BL 0 21. Roof 8 22. Other 8

(0) No glazing damage from impact forces

(2) Glazing in place and cracked from impact forces

(3) Glazing in place and holed from impact forces

(4) Glazing out-of-place (cracked or not) and not holed from impact forces

(5) Glazing out-of-place and holed from impact forces

(6) Glazing disintegrated from impact forces

(7) Glazing removed prior to accident

(8) No glazing

(9) Unknown if damaged

### Glazing Damage from Occupant Contact

23. WS 0 24. LF 0 25. RF 0 26. LR 0 27. RR 0

28. BL 0 29. Roof 0 30. Other 0

(0) No occupant contact to glazing or no glazing

(1) Glazing contacted by occupant but no glazing damage

(2) Glazing in place and cracked by occupant contact

(3) Glazing in place and holed by occupant contact

(4) Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact

(5) Glazing out-of-place by occupant contact and holed by occupant contact

(6) Glazing disintegrated by occupant contact

(9) Unknown if contacted by occupant

If No Glazing Damage **And** No Occupant Contact or No Glazing, Then Code IV 31 Through IV 46 As 0

### Type of Window/Windshield Glazing

31. WS 1 32. LF 2 33. RF 2 34. LR 2 35. RR 2

36. BL 2 37. Roof 0 38. Other 0

(0) No glazing contact and no damage, or no glazing

(1) AS-1 — Laminated

(2) AS-2 — Tempered

(3) AS-3 — Tempered-tinted

(4) AS-14 — Glass/Plastic

(8) Other (specify):

(9) Unknown

### Window Precrash Glazing Status

39. WS 1 40. LF 2 41. RF 2 42. LR 2 43. RR 2

44. BL 1 45. Roof 0 46. Other 0

(0) No glazing contact and no damage, or no glazing

(1) Fixed

(2) Closed

(3) Partially opened

(4) Fully opened

(9) Unknown

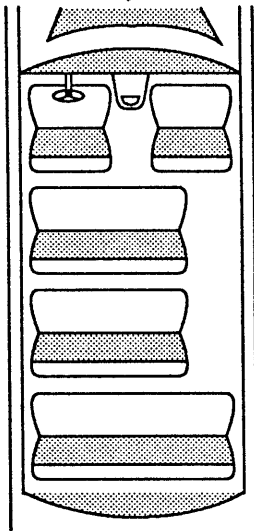
## INTRUSION WORK SHEET

TOP  
VIEW

Longitudinal

Lateral

Lateral

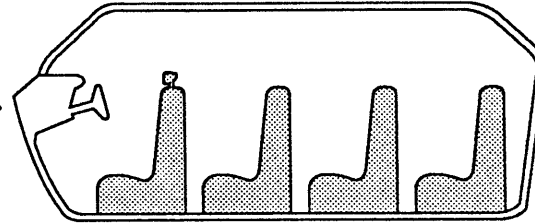


Longitudinal

LEFT SIDE  
VIEW

Vertical

Longitudinal

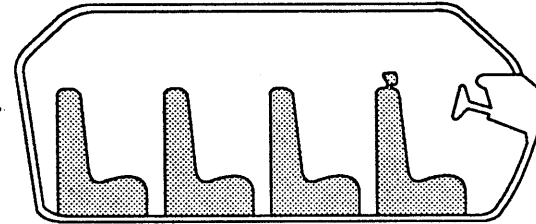


Longitudinal

RIGHT SIDE  
VIEW

Vertical

Longitudinal



Longitudinal

Vertical

Note: Sketch intruded areas

LOCATION OF INTRUSION	INTRUDED COMPONENT	COMPARISON VALUE	-	INTRUDED VALUE	=	INTRUSION	DOMINANT CRUSH DIRECTION
11	05		-		=		5.25"
13	05		-		=		2.25
11	02		-		=		1.5
11	17		-		=		4.0"
13	04		-		=		1.5
			-		=		
			-		=		
			-		=		
			-		=		
			-		=		
			-		=		
			-		=		
			-		=		
			-		=		
			-		=		
			-		=		

Document no more than the 15 most severe intrusions

## OCCUPANT AREA INTRUSION

Note: If no intrusions, leave variables IV 47-IV 86 blank.

	Location of Intrusion	Intruding Component	Magnitude of Intrusion	Dominant Crush Direction
1st	47. <u>11</u>	48. <u>05</u>	49. <u>2</u>	50. <u>2</u>
2nd	51. <u>11</u>	52. <u>02</u>	53. <u>1</u>	54. <u>2</u>
3rd	55. <u>11</u>	56. <u>17</u>	57. <u>2</u>	58. <u>1</u>
4th	59. <u>13</u>	60. <u>04</u>	61. <u>1</u>	62. <u>2</u>
5th	63. <u>13</u>	64. <u>05</u>	65. <u>1</u>	66. <u>2</u>
6th	67. _____	68. _____	69. _____	70. _____
7th	71. _____	72. _____	73. _____	74. _____
8th	75. _____	76. _____	77. _____	78. _____
9th	79. _____	80. _____	81. _____	82. _____
10th	83. _____	84. _____	85. _____	86. _____

## LOCATION OF INTRUSION

## Front Seat

- (11) Left  
(12) Middle  
(13) Right

## Fourth Seat

- (41) Left  
(42) Middle  
(43) Right

## Second Seat

- (21) Left  
(22) Middle  
(23) Right

- (97) Catastrophic  
(98) Other enclosed area (specify): \_\_\_\_\_

- (99) Unknown

## Third Seat

- (31) Left  
(32) Middle  
(33) Right

## INTRUDING COMPONENT

## Interior Components

- (01) Steering assembly  
(02) Instrument panel left  
(03) Instrument panel center  
(04) Instrument panel right  
(05) Toe pan  
(06) A-pillar  
(07) B-pillar  
(08) C-pillar  
(09) D-pillar  
(10) Door panel (side)  
(12) Roof (or convertible top)  
(13) Roof side rail  
(14) Windshield  
(15) Windshield header  
(16) Window frame  
(17) Floor pan (includes sill)  
(18) Backlight header  
(19) Front seat back  
(20) Second seat back  
(21) Third seat back  
(22) Fourth seat back  
(23) Fifth seat back  
(24) Seat cushion  
(25) Back door/panel (e.g., tailgate)  
(26) Other interior component (specify): \_\_\_\_\_

- (27) Side panel - forward of the A-pillar  
(28) Side panel - rear of the A-pillar

## Exterior Components

- (30) Hood  
(31) Outside surface of vehicle (specify): \_\_\_\_\_  
(32) Other exterior object in the environment (specify): \_\_\_\_\_  
(33) Unknown exterior object  
(97) Catastrophic  
(98) Intrusion of unlisted component(s) (specify): \_\_\_\_\_  
(99) Unknown

## MAGNITUDE OF INTRUSION

- (1)  $\geq 1$  inch but  $< 3$  inches  
(2)  $\geq 3$  inches but  $< 6$  inches  
(3)  $\geq 6$  inches but  $< 12$  inches  
(4)  $\geq 12$  inches but  $< 18$  inches  
(5)  $\geq 18$  inches but  $< 24$  inches  
(6)  $\geq 24$  inches  
(7) Catastrophic  
(9) Unknown

## DOMINANT CRUSH DIRECTION

- (1) Vertical  
(2) Longitudinal  
(3) Lateral  
(7) Catastrophic  
(9) Unknown

**STEERING RIM/SPOKE DEFORMATION**

COMPARISON VALUE	-	DAMAGE VALUE	=	DEFORMATION
	-		=	
	-		=	
	-		=	
	-		=	



**STEERING COLUMN****87. Steering Column Type**2

- (1) Fixed column  
 (2) Tilt column  
 (3) Telescoping column  
 (4) Tilt and telescoping column  
 (8) Other column type (specify):

\_\_\_\_\_  
 (9) Unknown

**88. Blank**

(This variable is left blank  
 so that numbering consistency  
 can be maintained with the  
 1988-90 CDS.

X X**89. Blank**

(This variable is left blank  
 so that numbering consistency  
 can be maintained with the  
 1988-90 CDS.

X X X**90. Blank**

(This variable is left blank  
 so that numbering consistency  
 can be maintained with the  
 1988-90 CDS.

X X X**91. Blank**

(This variable is left blank  
 so that numbering consistency  
 can be maintained with the  
 1988-90 CDS.

X X X**92. Steering Rim/Spoke Deformation**4

3.5" Code actual measured  
 deformation to the nearest inch.

- (0) No steering rim deformation  
 (1-5) Actual measured value  
 (6) 6 inches or more  
 (8) Observed deformation cannot be measured  
 (9) Unknown

**93. Location of Steering Rim/Spoke Deformation**05

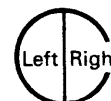
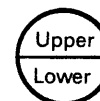
(00) No steering rim deformation

**Quarter Sections**

- (01) Section A  
 (02) Section B  
 (03) Section C  
 (04) Section D

**Half Sections**

- (05) Upper half of rim/spoke  
 (06) Lower half of rim/spoke  
 (07) Left half of rim/spoke  
 (08) Right half of rim/spoke



- (09) Complete steering wheel collapse  
 (10) Undetermined location  
 (99) Unknown

**INSTRUMENT PANEL****94. Odometer Reading**001,000

685 miles—Code mileage to the  
 nearest 1,000 miles

- (000) No odometer  
 (001) Less than 1,500 miles  
 (300) 299,500 miles or more  
 (999) Unknown

Source: \_\_\_\_\_

**95. Instrument Panel Damage from Occupant Contact?**1

- (0) No  
 (1) Yes  
 (9) Unknown

**96. Knee Bolsters Deformed from Occupant Contact?**1

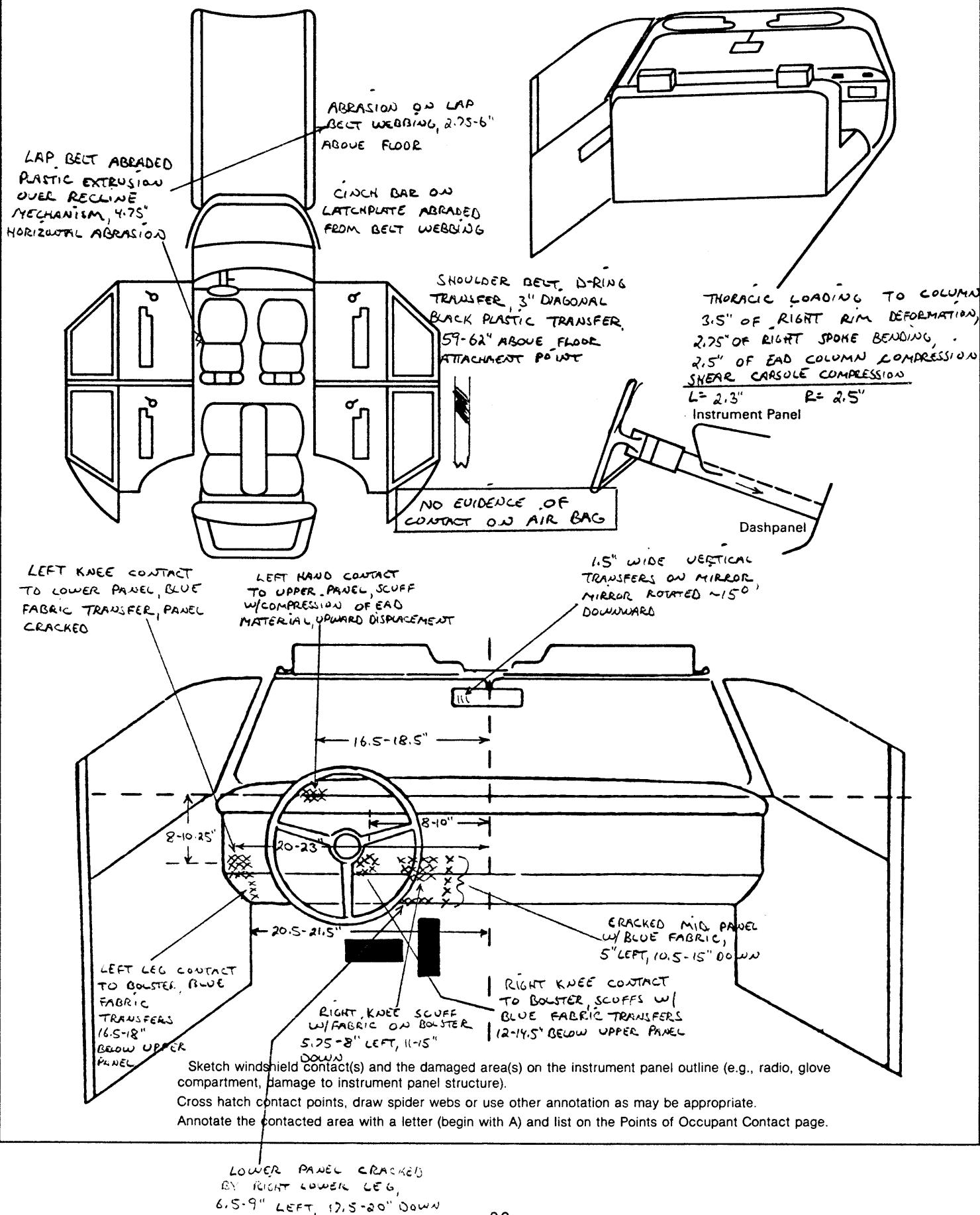
- (0) No  
 (1) Yes  
 (8) Not present  
 (9) Unknown

**97. Did Glove Compartment Door Open During Collision(s)?**1

- (0) No  
 (1) Yes  
 (8) Not present  
 (9) Unknown

## VEHICLE INTERIOR SKETCHES

Note area of ejection/entrapment



## POINTS OF OCCUPANT CONTACT

Contact	Interior Component Contacted	Occupant No. If Known	Body Region If Known	Supporting Physical Evidence	Confidence Level of Contact Point
A	41	DRIVER	TORSO	Aluminum to webbing & plastic deformation	1
B	42	DRIVER	TORSO	D-ring transfer on webbing	1
C	09	DRIVER	(L) HAND	SCUFF w/ COMPRESSION	1
D	13	DRIVER	(L) KNEE	FABRIC TRANSFER, PLASTIC CRACKED	1
E	13	DRIVER	(R) KNEE	FABRIC TRANSFER / SCUFF	1
F	10	DRIVER	(R) KNEE	FABRIC TRANSFER / SCUFF	1
G	04	DRIVER	HANDS/TORSO	3.5" OF RIM DISPLACEMENT	1
H	07	DRIVER	TORSO	2.5" OF SHEAR CARSOLE SEPARATION	1
I	02	DRIVER	(R) HAND	VERTICAL TRANSFERS, DISPLACEMENT	
J					
K					
L					
M					
N					

## CODES FOR INTERIOR COMPONENTS

## FRONT

- (01) Windshield
- (02) Mirror
- (03) Sunvisor
- (04) Steering wheel rim
- (05) Steering wheel hub/spoke
- (06) Steering wheel (combination of codes 04 and 05)
- (07) Steering column, transmission selector lever, other attachment
- (08) Add on equipment (e.g., CB, tape deck, air conditioner)
- (09) Left instrument panel and below
- (10) Center instrument panel and below
- (11) Right instrument panel and below
- (12) Glove compartment door
- (13) Knee bolster
- (14) Windshield including one or more of the following: front header, A-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (15) Windshield including one or more of the following: front header, A-pillar, instrument panel, or mirror (passenger side only)
- (16) Other front object (specify): \_\_\_\_\_

## LEFT SIDE

- (20) Left side interior surface, excluding hardware or armrests
- (21) Left side hardware or armrest
- (22) Left A pillar
- (23) Left B pillar
- (24) Other left pillar (specify): \_\_\_\_\_
- (25) Left side window glass or frame

- (26) Left side window glass including one or more of the following: frame, window sill, A-pillar, B-pillar, or roof side rail
- (27) Other left side object (specify): \_\_\_\_\_

## RIGHT SIDE

- (30) Right side interior surface, excluding hardware or armrests
- (31) Right side hardware or armrest
- (32) Right A pillar
- (33) Right B pillar
- (34) Other right pillar (specify): \_\_\_\_\_
- (35) Right side window glass or frame
- (36) Right side window glass including one or more of the following: frame, window sill, A-pillar, B-pillar, or roof side rail
- (37) Other right side object (specify): \_\_\_\_\_

## INTERIOR

- (40) Seat, back support
- (41) Belt restraint webbing/buckle
- (42) Belt restraint B-pillar attachment point
- (43) Other restraint system component (specify): \_\_\_\_\_
- (44) Head restraint system
- (45) Air bag
- (46) Other occupants (specify): \_\_\_\_\_
- (47) Interior loose objects

- (48) Child safety seat (specify): \_\_\_\_\_

- (49) Other interior object (specify): \_\_\_\_\_

## ROOF

- (50) Front header
- (51) Rear header
- (52) Roof left side rail
- (53) Roof right side rail
- (54) Roof or convertible top

## FLOOR

- (56) Floor including toe pan
- (57) Floor or console mounted transmission lever, including console
- (58) Parking brake handle
- (59) Foot controls including parking brake

## REAR

- (60) Backlight (rear window)
- (61) Backlight storage rack, door, etc.
- (62) Other rear object (specify): \_\_\_\_\_

## CONFIDENCE LEVEL OF CONTACT POINT

- (1) Certain
- (2) Probable
- (3) Possible
- (4) Unknown

## AUTOMATIC RESTRAINTS

NOTES: Encode the data for each applicable front seat position. The attributes for the variables may be found below. Restraint systems should be assessed during the vehicle inspection then coded on the Occupant Assessment Form.

		Left	Center	Right
F I R S T	Availability	1	—	—
	Function	1	—	—
	Failure	1	—	—

### AIR BAGS

#### Air Bag System Availability/Function

- (0) Not equipped/not available
- (1) Air bag

Non-functional

- (2) Air bag disconnected (specify): \_\_\_\_\_

- (3) Air bag not reinstalled
- (9) Unknown

#### Air Bag System Deployment

- (0) Not equipped/not available
- (1) Air bag deployed during accident
- (2) Air bag deployed inadvertently just prior to accident
- (3) Air bag deployed, accident sequence undetermined
- (4) Nondeployed
- (5) Unknown if deployed
- (9) Unknown

#### Did Air Bag System Fail?

- (0) Not equipped/not available
- (1) No
- (2) Yes (specify): \_\_\_\_\_

- (9) Unknown

### AUTOMATIC BELTS

#### Automatic (Passive) Belt System Availability/Function

- (0) Not equipped/not available
- (1) 2 point automatic belts
- (2) 3 point automatic belts
- (3) Automatic belts—type unknown

Non-functional

- (4) Automatic belts destroyed or rendered inoperative
- (9) Unknown

#### Automatic (Passive) Belt System Use

- (0) Not equipped/not available/destroyed or rendered inoperative
- (1) Automatic belt in use
- (2) Automatic belt not in use (manually disconnected, motorized track inoperative)
- (3) Automatic belt use unknown
- (9) Unknown

#### Automatic (Passive) Belt System Type

- (0) Not equipped/not available
- (1) Non-motorized system
- (2) Motorized system
- (9) Unknown

#### Proper Use of Automatic (Passive) Belt System

- (0) Not equipped/not available/not used
- (1) Automatic belt used properly
- (2) Automatic belt used properly with child safety seat

#### Automatic Belt Used Improperly

- (3) Automatic shoulder belt worn under arm
- (4) Automatic shoulder belt worn behind back
- (5) Automatic belt worn around more than one person
- (6) Lap portion of automatic belt worn on abdomen
- (7) Automatic lap and shoulder belt or automatic shoulder belt used improperly with child safety seat (specify): \_\_\_\_\_

- (8) Other improper use of automatic belt system (specify): \_\_\_\_\_
- (9) Unknown

#### Automatic (Passive) Belt Failure Modes During Accident

- (0) Not equipped/not available/not in use
- (1) No automatic belt failure(s)
- (2) Torn webbing (stretched webbing not included)
- (3) Broken buckle or latchplate
- (4) Upper anchorage separated
- (5) Other anchorage separated (specify): \_\_\_\_\_

- (6) Broken retractor
- (7) Combination of above (specify): \_\_\_\_\_
- (8) Other automatic belt failure (specify): \_\_\_\_\_

- (9) Unknown

**MANUAL RESTRAINTS**

**NOTES:** Encode the applicable data for **each seat position** in the vehicle. The attributes for the variables may be found below. Restraint systems should be assessed during the vehicle inspection then coded on the Occupant Assessment Form.

If a child safety seat is present, encode the data on the back of this page.

If the vehicle has automatic restraints available, encode the appropriate data on the back of the previous page.

		Left	Center	Right
<b>FIRST</b>	Availability	4	3	4
	Use	04	-	-
	Failure Modes	1	-	-
<b>SECOND</b>	Availability	4	3	4
	Use	-	-	-
	Failure Modes	-	-	-
<b>THIRD</b>	Availability	X		
	Use			
	Failure Modes			
<b>OTHER</b>	Availability			
	Use			
	Failure Modes			

**Manual (Active) Belt System Availability**

- (0) Not available
- (1) Belt removed/destroyed
- (2) Shoulder belt
- (3) Lap belt
- (4) Lap and shoulder belt
- (5) Belt available – type unknown
- (8) Other belt (specify):

(9) Unknown

**Manual (Active) Belt System Use**

- (00) None used, not available, or belt removed/destroyed
- (01) Inoperative (specify):

- (02) Shoulder belt
- (03) Lap belt
- (04) Lap and shoulder belt
- (05) Belt used – type unknown

(08) Other belt used (specify):

- (12) Shoulder belt used with child safety seat
- (13) Lap belt used with child safety seat
- (14) Lap and shoulder belt used with child safety seat
- (15) Belt used with child safety seat – type unknown
- (18) Other belt used with child safety seat (specify):

(99) Unknown if belt used

**Manual (Active) Belt Failure Modes During Accident**

- (0) No manual belt used or not available
- (1) No manual belt failure(s)
- (2) Torn webbing (stretched webbing not included)
- (3) Broken buckle or latchplate
- (4) Upper anchorage separated
- (5) Other anchorage separated (specify):

- (6) Broken retractor
- (7) Combination of above (specify):

(8) Other manual belt failure (specify):

(9) Unknown



**CHILD SAFETY SEAT FIELD ASSESSMENT**

When a child safety seat is present enter the occupant's number in the first row and complete the column below the occupant's number using the codes listed below. Complete a column for each child safety seat present.

Occupant Number						
1. Type of Child Safety Seat						
2. Child Safety Seat Orientation						
3. Child Safety Seat Harness Usage						
4. Child Safety Seat Shield Usage						
5. Child Safety Seat Tether Usage						
6. Child Safety Seat Make/Model	Specify Below for Each Child Safety Seat					

**1. Type of Child Safety Seat**

- (0) No child safety seat  
 (1) Infant seat  
 (2) Toddler seat  
 (3) Convertible seat  
 (4) Booster seat  
 (7) Other type child safety seat (specify):

- \_\_\_\_\_  
 (8) Unknown child safety seat type  
 (9) Unknown if child safety seat used

**2. Child Safety Seat Orientation**

- (00) No child safety seat  
 Designed for Rear Facing for This Age/Weight  
 (01) Rear facing  
 (02) Forward facing  
 (03) Other orientation (specify):
- \_\_\_\_\_  
 (04) Unknown orientation  
 Designed for Forward Facing for This Age/Weight  
 (11) Rear facing  
 (12) Forward facing  
 (18) Other orientation (specify):

- \_\_\_\_\_  
 (19) Unknown orientation

- Unknown Design or Orientation for This Age/Weight, or Unknown Age/Weight  
 (21) Rear facing  
 (22) Forward facing  
 (28) Other orientation (specify):

- \_\_\_\_\_  
 (29) Unknown orientation

- (99) Unknown if child safety seat used

**3. Child Safety Seat Harness Usage****4. Child Safety Seat Shield Usage****5. Child Safety Seat Tether Usage**

Note: Options Below Are Used for Variables 3-5.

- (00) No child safety seat

Not Designed with Harness/Shield/Tether

- (01) After market harness/shield/tether added, not used  
 (02) After market harness/shield/tether used  
 (03) Child safety seat used, but no after market harness/shield/tether added  
 (09) Unknown if harness/shield/tether added or used

Designed with Harness/Shield/Tether

- (11) Harness/shield/tether not used  
 (12) Harness/shield/tether used  
 (19) Unknown if harness/shield/tether used

Unknown if Designed with Harness/Shield/Tether

- (21) Harness/shield/tether not used  
 (22) Harness/shield/tether used  
 (29) Unknown if harness/shield/tether used

- (99) Unknown if child safety seat used

**6. Child Safety Seat Make/Model**

(Specify make/model and occupant number)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**HEAD RESTRAINTS/SEAT EVALUATION**

NOTES: Encode the applicable data for **each seat position** in the vehicle. The attributes for these variables may be found at the bottom of the page. Head restraint type/damage and seat type/performance should be assessed during the vehicle inspection then coded on the Occupant Assessment Form.

		Left	Center	Right
F I R S T	Head Restraint Type/Damage	3	-	3
	Seat Type	06	06	06
	Seat Performance	8	8	8
S E C O N D	Head Restraint Type/Damage	0	0	0
	Seat Type	03	03	03
	Seat Performance	1	1	1
T H I R D	Head Restraint Type/Damage			
	Seat Type			
	Seat Performance			
O T H E R	Head Restraint Type/Damage			
	Seat Type			
	Seat Performance			

**Head Restraint Type/Damage by Occupant at This Occupant Position**

- (0) No head restraints
- (1) Integral – no damage
- (2) Integral – damaged during accident
- (3) Adjustable – no damage
- (4) Adjustable – damaged during accident
- (5) Add-on – no damage
- (6) Add-on – damaged during accident
- (8) Other (specify): \_\_\_\_\_
- (9) Unknown

**Seat Type (This Occupant Position)**

- (00) No seat
- (01) Bucket
- (02) Bucket with folding back
- (03) Bench
- (04) Bench with separate back cushions
- (05) Bench with folding back(s)
- (06) Split bench with separate back cushions
- (07) Split bench with folding back(s)
- (08) Pedestal (i.e., van type)
- (09) Other seat type (specify): \_\_\_\_\_
- (99) Unknown

**Seat Performance (This Occupant Position)**

- (0) No seat
- (1) No seat performance failure(s)
- (2) Seat adjusters failed
- (3) Seat back folding locks failed
- (4) Seat tracks/anchors failed
- (5) Deformed by impact of occupant
- (6) Deformed by passenger compartment intrusion (specify): \_\_\_\_\_

- (7) Combination of above (specify): \_\_\_\_\_
- (8) Other (specify): \_\_\_\_\_

- (9) Unknown *seat assembly displaced by deformation & intrusion of floor*

**DESCRIBE ANY INDICATION OF ABNORMAL OCCUPANT POSTURE (I.E. UNUSUAL OCCUPANT CONTACT PATTERN)**

**EJECTION/ENTRAPMENT DATA**

Complete the following if the researcher has any indications that an occupant was either ejected from or entrapped in the vehicle. Code the appropriate data on the Occupant Assessment Form.

**EJECTION**      No [☒]      Yes [ ☐ ]

Describe indications of ejection and body parts involved in partial ejection(s):

---



---



---



---

Occupant Number						
Ejection						
(Note on Vehicle Interior Sketch) Ejection Area						
Ejection Medium						
Medium Status						

**Ejection**

- (1) Complete ejection
- (2) Partial ejection
- (3) Ejection, unknown degree
- (9) Unknown

**Ejection Area**

- (1) Windshield
- (2) Left front
- (3) Right front
- (4) Left rear
- (5) Right rear
- (6) Rear

(7) Roof

(8) Other area (e.g., back of pickup, etc.) (specify):

\_\_\_\_\_

(9) Unknown

**Ejection Medium**

- (1) Door/hatch/tailgate
- (2) Nonfixed roof structure
- (3) Fixed glazing
- (4) Nonfixed glazing (specify):

\_\_\_\_\_

(5) Integral structure

(8) Other medium (specify):

\_\_\_\_\_

(9) Unknown

**Medium Status (Immediately Prior to Impact)**

- (1) Open
- (2) Closed
- (3) Integral structure
- (9) Unknown

**ENTRAPMENT**      No [☒]      Yes [ ☐ ]

Describe entrapment mechanism: \_\_\_\_\_

---



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---

Component(s): \_\_\_\_\_

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(Note in vehicle interior diagram)

APPENDIX E

NASS Occupant Forms



## OCCUPANT ASSESSMENT FORM

<p>1. Primary Sampling Unit Number <u>    </u></p> <p>2. Case Number - <del>Stratum</del> <u>91-14</u></p> <p>3. Vehicle Number <u>01</u></p> <p>4. Occupant Number <u>01</u></p> <p><b>OCCUPANT'S CHARACTERISTICS</b></p> <p>5. Occupant's Age <u>49</u> Code actual age at time of accident. (00) Less than one year old (specify by month): _____ (97) 97 years and older (99) Unknown</p> <p>6. Occupant's Sex <u>1</u> (1) Male (2) Female (9) Unknown</p> <p>7. Occupant's Height <u>75"</u> Code actual height to the nearest inch. (99) Unknown</p> <p>8. Occupant's Weight <u>185</u> Code actual weight to the nearest pound. (999) Unknown</p> <p>9. Occupant's Role <u>1</u> (1) Driver (2) Passenger (9) Unknown</p> <p>10. Occupant's Seat Position <u>11</u> Front Seat (11) Left side (12) Middle (13) Right Side (14) Other (specify): _____ (15) On or in the lap of another occupant Second Seat (21) Left side (22) Middle (23) Right Side (24) Other (specify): _____ (25) On or in the lap of another occupant Third Seat (31) Left side (32) Middle (33) Right Side (34) Other (specify): _____ (35) On or in the lap of another occupant Fourth Seat (41) Left side (42) Middle (43) Right Side (44) Other (specify): _____ (45) On or in the lap of another occupant (97) In or on unenclosed area (98) Other seat (specify): _____ (99) Unknown</p>	<p>11. Occupant's Posture <u>0</u> (0) Normal posture (1) Abnormal posture (specify): _____ (9) Unknown</p> <p><b>EJECTION/ENTRAPMENT</b></p> <p>12. Ejection <u>0</u> (0) No ejection (1) Complete ejection (2) Partial ejection (3) Ejection, unknown degree (9) Unknown</p> <p>13. Ejection Area <u>0</u> (0) No ejection (1) Windshield (2) Left front (3) Right front (4) Left rear (5) Right rear (6) Rear (7) Roof (8) Other area (e.g., back of pickup, etc.) (specify): _____ (9) Unknown</p> <p>14. Ejection Medium <u>0</u> (0) No ejection (1) Door/hatch/tailgate (2) Nonfixed roof structure (3) Fixed glazing (4) Nonfixed glazing (specify): _____ (5) Integral structure (8) Other medium (specify): _____ (9) Unknown</p> <p>15. Medium Status (Immediately Prior to Impact) <u>0</u> (0) No ejection (1) Open (2) Closed (3) Integral structure (9) Unknown</p> <p>16. Entrapment <u>0</u> (NOTE: Entrapped means that part of the person was in the vehicle and mechanically restrained; jammed doors and immobilizing injuries by themselves are not sufficient to constitute entrapment.) (0) Not entrapped (1) Entrapped (9) Unknown</p>
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**RESTRAINT SYSTEM AND SEAT EVALUATION****17. Manual (Active) Belt System Availability** 4

- (0) Not available
- (1) Belt removed/destroyed
- (2) Shoulder belt
- (3) Lap belt
- (4) Lap and shoulder belt
- (5) Belt available—type unknown
- (8) Other belt (specify): \_\_\_\_\_

(9) Unknown

**18. Manual (Active) Belt System Use** 04

- (00) None used, not available, or belt removed/destroyed
- (01) Inoperative (specify): \_\_\_\_\_

- (02) Shoulder belt
- (03) Lap belt
- (04) Lap and shoulder belt
- (05) Belt used—type unknown
- (08) Other belt used (specify): \_\_\_\_\_

- (12) Shoulder belt used with child safety seat
- (13) Lap belt used with child safety seat
- (14) Lap and shoulder belt used with child safety seat
- (15) Belt used with child safety seat—type unknown
- (18) Other belt used with child safety seat (specify): \_\_\_\_\_

(99) Unknown if belt used

**19. Proper Use of Manual (Active) Belts** 1

- (0) None used or not available
- (1) Belt used properly
- (2) Belt used properly with child safety seat

Belt Used Improperly

- (3) Shoulder belt worn under arm
- (4) Shoulder belt worn behind back or seat
- (5) Belt worn around more than one person
- (6) Lap belt worn on abdomen
- (7) Lap belt or lap and shoulder belt used improperly with child safety seat (specify): \_\_\_\_\_

(8) Other improper use of manual belt system (specify): \_\_\_\_\_

(9) Unknown

**20. Manual (Active) Belt Failure Modes During Accident** 1

- (0) No manual belt used or not available
- (1) No manual belt failure(s)
- (2) Torn webbing (stretched webbing not included)
- (3) Broken buckle or latchplate
- (4) Upper anchorage separated
- (5) Other anchorage separated (specify): \_\_\_\_\_

- (6) Broken retractor
- (7) Combination of above (specify): \_\_\_\_\_

(8) Other manual belt failure (specify): \_\_\_\_\_

(9) Unknown

**21. Air Bag System Availability/Function** 1

- (0) Not equipped/not available
- (1) Air bag

Non-functional

(2) Air bag disconnected (specify): \_\_\_\_\_

(3) Air bag not reinstalled

(9) Unknown

**22. Air Bag System Deployment** 1

- (0) Not equipped/not available
- (1) Air bag deployed during accident
- (2) Air bag deployed inadvertently just prior to accident
- (3) Air bag deployed, accident sequence undetermined
- (4) Nondeployed
- (5) Unknown if deployed
- (9) Unknown

**23. Did Air Bag System Fail?** 1

- (0) Not equipped/not available
- (1) No
- (2) Yes (specify): \_\_\_\_\_

(9) Unknown

Note: See Variables 44 through 48 (Page 5) for Information on Automatic Belts

**24. Police Reported Restraint Use** 4

- (0) None used
- (1) Police did not indicate restraint use
- (2) Shoulder belt
- (3) Lap belt
- (4) Lap and shoulder belt
- (5) Belt used, type not specified
- (6) Child safety seat
- (7) Other or automatic restraint (specify): \_\_\_\_\_
- (8) Restrained, type unknown
- (9) Police indicated "unknown"

**25. Head Restraint Type/Damage by Occupant at This Occupant Position** 3

- (0) No head restraints
- (1) Integral—no damage
- (2) Integral—damaged during accident
- (3) Adjustable—no damage
- (4) Adjustable—damaged during accident
- (5) Add-on—no damage
- (6) Add-on—damaged during accident
- (8) Other specify: \_\_\_\_\_
- (9) Unknown

26. Seat Type (This Occupant Position) 06
- (00) Occupant not seated or no seat
  - (01) Bucket
  - (02) Bucket with folding back
  - (03) Bench
  - (04) Bench with separate back cushions
  - (05) Bench with folding back(s)
  - (06) Split bench with separate back cushions
  - (07) Split bench with folding back(s)
  - (08) Pedestal (i.e., van type)
  - (09) Other seat type (specify):

(99) Unknown

27. Seat Performance (This Occupant Position) 6
- (0) Occupant not seated or no seat
  - (1) No seat performance failure(s)
  - (2) Seat adjusters failed
  - (3) Seat back folding locks failed
  - (4) Seat track/anchors failed
  - (5) Deformed by impact of occupant
  - (6) Deformed by passenger compartment intrusion (specify):

4" VERTICAL DISPLACEMENT OF  
FLOOR PAN

(7) Combination of above (specify):

(8) Other (specify):

(9) Unknown

### CHILD SAFETY SEAT

28. Child Safety Seat Make/Model 000
- (000) No child safety seat
- Applicable codes are found in your NASS CDS Data Collection, Coding, and Editing Manual
- (997) Other make/model (specify):

(998) Unknown make/model

(999) Unknown if child safety seat used

29. Type of Child Safety Seat 0
- (0) No child safety seat
  - (1) Infant seat
  - (2) Toddler seat
  - (3) Convertible seat
  - (4) Booster seat
  - (7) Other type child safety seat (specify):

(8) Unknown child safety seat type

(9) Unknown if child safety seat used

30. Child Safety Seat Orientation 00
- (00) No child safety seat

Designed for Rear Facing for This Age/Weight

- (01) Rear facing
- (02) Forward facing
- (08) Other orientation (specify):

(09) Unknown orientation

Designed for Forward Facing for This Age/Weight

- (11) Rear facing
- (12) Forward facing
- (18) Other orientation (specify):

(19) Unknown orientation

Unknown Design or Orientation for This Age/Weight, or Unknown Age/Weight

- (21) Rear facing
- (22) Forward facing
- (28) Other orientation (specify):

(29) Unknown orientation

(99) Unknown if child safety seat used

31. Child Safety Seat Harness Usage 00
32. Child Safety Seat Shield Usage 00
33. Child Safety Seat Tether Usage 00

Note: Options below applicable to Variables OA31-OA33.

(00) No child safety seat

Not Designed with  
Harness/Shield/Tether

- (01) After market harness/shield/tether added, not used
- (02) After market harness/shield/tether used
- (03) Child safety seat used, but no after market harness/shield/tether added
- (09) Unknown if harness/shield/tether added or used

Designed with Harness/Shield/Tether

- (11) Harness/shield/tether not used
- (12) Harness/shield/tether used
- (19) Unknown if harness/shield/tether used

Unknown If Designed with Harness/Shield/Tether

- (21) Harness/shield/tether not used
- (22) Harness/shield/tether used
- (29) Unknown if harness/shield/tether used

(99) Unknown if child safety seat used

**INJURY CONSEQUENCES****34. Injury Severity (Police Rating)** 1

- (0) O – No injury
- (1) C – Possible injury
- (2) B – Nonincapacitating injury
- (3) A – Incapacitating injury
- (4) K – Killed
- (5) U – Injury, severity unknown
- (6) Died prior to accident
- (9) Unknown

**35. Treatment – Mortality** 3

- (0) No treatment
- (1) Fatal
- (2) Fatal – ruled disease

Nonfatal

- (3) Hospitalized
- (4) Transported and released
- (5) Treatment at scene – nontransported
- (6) Treatment later
- (8) Treatment – other (specify):  
\_\_\_\_\_

(9) Unknown

**36. Type of Medical Facility (for Initial Treatment)** 2

- (0) Not treated at a medical facility
- (1) Trauma center
- (2) Hospital
- (3) Medical clinic
- (4) Physician's office
- (5) Treatment later at medical facility
- (8) Other (specify):  
\_\_\_\_\_

(9) Unknown

**37. Hospital stay** 04

- \_\_\_\_\_ Code number of days (up through 60)  
that the occupant stayed in the hospital
- (00) Not hospitalized
  - (61) 61 days or more
  - (99) Unknown

**38. Working Days Lost** 15

- \_\_\_\_\_ Code the number of days  
(up through 60) that the occupant  
lost from work due to the accident
- (00) No working days lost
  - (61) 61 days or more ~ 3 wks.
  - (62) Fatally injured
  - (97) Not working prior to accident
  - (99) Unknown

**39. Time to Death** 00

- \_\_\_\_\_ Code number of hours from time of  
accident to time of death up through 24  
hours. If time of death is greater than 24  
hours, code number of days. (Note: 1 day =  
31, 2 days = 32, ... n days = 30 + n up through  
30 days = 60)
- (00) Not fatal
  - (96) Fatal – ruled disease
  - (99) Unknown

**40. 1st Medically Reported Cause of Death** 00**41. 2nd Medically Reported Cause of Death** 00**42. 3rd Medically Reported Cause of Death** 00

- \_\_\_\_\_ Code the Occupant Injury from line  
number(s) for the medically reported  
injury(s) which reportedly contributed to  
this occupant's death
- (00) Not fatal or no additional causes
  - (97) Other result (specify):  
\_\_\_\_\_

(99) Unknown

**43. Number of Recorded Injuries for  
This Occupant** 08

- \_\_\_\_\_ Code the actual number of  
injuries recorded for this occupant.
- (00) No recorded injuries
  - (97) Injured, details unknown
  - (99) Unknown if injured

## National Accident Sampling System-Crashworthiness Data System: General Vehicle Form

Page 5

<p>44. Automatic (Passive) Belt System Availability/ Function <span style="float: right;"><u>0</u></span></p> <p>(0) Not equipped/not available          (1) 2 point automatic belts          (2) 3 point automatic belts          (3) Automatic belts-type unknown</p> <p>Non-functional          (4) Automatic belts destroyed or rendered inoperative          (9) Unknown</p> <p>45. Automatic (Passive) Belt System Use <span style="float: right;"><u>0</u></span></p> <p>(0) Not equipped/not available/destroyed or rendered inoperative          (1) Automatic belt in use          (2) Automatic belt not in use (manually disconnected, motorized track inoperative) (specify): _____          (3) Automatic belt use unknown          (9) Unknown</p> <p>46. Automatic (Passive) Belt System Type <span style="float: right;"><u>0</u></span></p> <p>(0) Not equipped/not available          (1) Non-motorized system          (2) Motorized system          (9) Unknown</p>	<p>47. Proper Use of Automatic (Passive) Belt System <span style="float: right;"><u>0</u></span></p> <p>(0) Not equipped/not available/not used          (1) Automatic belt used properly          (2) Automatic belt used properly with child safety seat</p> <p>Automatic Belt Used Improperly          (3) Automatic shoulder belt worn under arm          (4) Automatic shoulder belt worn behind back          (5) Automatic belt worn around more than one person          (6) Lap portion of automatic belt worn on abdomen          (7) Automatic lap and shoulder belt or automatic shoulder belt used improperly with child safety seat (specify): _____          (8) Other improper use of automatic belt system (specify): _____          (9) Unknown</p> <p>48. Automatic (Passive) Belt Failure Modes During Accident <span style="float: right;"><u>0</u></span></p> <p>(0) Not equipped/not available/not in use          (1) No automatic belt failure(s)          (2) Torn webbing (stretched webbing not included)          (3) Broken buckle or latchplate          (4) Upper anchorage separated          (5) Other anchorage separated (specify): _____          (6) Broken retractor          (7) Combination of above (specify): _____          (8) Other automatic belt failure (specify): _____          (9) Unknown</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

UPDATE CANDIDATE? NO [✓] YES [ ]

OCCUPANT INJURY FORM INCLUDED WITH INITIAL SUBMISSION? NO [ ] YES [✓]

\*\*\* STOP HERE \*\*\*  
 IF THERE ARE NO RECORDED INJURIES  
 (I.E., OA43 = 00,97,99)



U.S. Department of Transportation  
National Highway Traffic Safety  
Administration

Form Approved  
O.M.B. No. 2127-0021  
NATIONAL ACCIDENT SAMPLING SYSTEM  
CRASHWORTHINESS DATA SYSTEM

## OCCUPANT INJURY FORM

1. ~~Primary Sampling Unit Number~~ \_\_\_\_\_ 3. Vehicle Number 01  
2. Case Number ~~Stratum~~ 91-14 4. Occupant Number 01

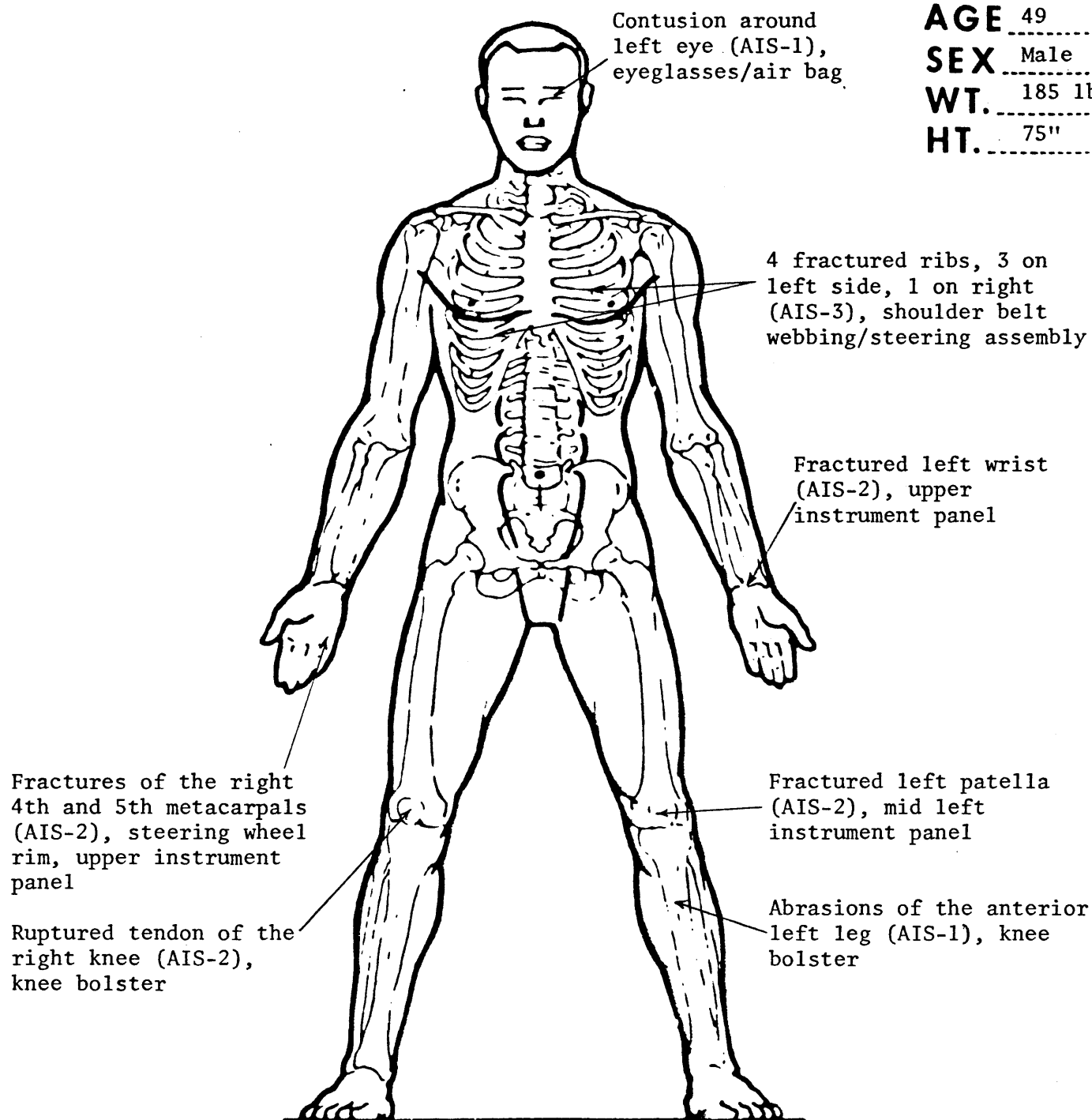
### INJURY DATA

Record below the actual injuries sustained by this occupant that were identified from the official and unofficial data sources. Remember not to double count an injury just because it was identified from two different sources. If greater than ten injuries have been documented, encode the balance on the Occupant Injury Supplement.

	Source of Injury Data	O.I.C.—A.I.S.				Injury Source	Injury Source Confidence Level	Direct/ Indirect Injury	Occupant Area Intrusion No.	
		Body Region	Aspect	Lesion	System Organ					A.I.S. Severity
1st	5. <u>7</u>	6. <u>C</u>	7. <u>B</u>	8. <u>F</u>	9. <u>S</u>	10. <u>3</u>	11. <u>41/05</u>	12. <u>1</u>	13. <u>1</u>	14. <u>00</u>
2nd	15. <u>7</u>	16. <u>B</u>	17. <u>L</u>	18. <u>F</u>	19. <u>S</u>	20. <u>2</u>	21. <u>09</u>	22. <u>1</u>	23. <u>1</u>	24. <u>02</u>
3rd	25. <u>7</u>	26. <u>K</u>	27. <u>R</u>	28. <u>R</u>	29. <u>M</u>	30. <u>2</u>	31. <u>13</u>	32. <u>1</u>	33. <u>1</u>	34. <u>02</u>
4th	35. <u>7</u>	36. <u>W</u>	37. <u>R</u>	38. <u>F</u>	39. <u>S</u>	40. <u>2</u>	41. <u>04/10</u>	42. <u>2</u>	43. <u>2</u>	44. <u>02</u>
5th	45. <u>7</u>	46. <u>W</u>	47. <u>R</u>	48. <u>F</u>	49. <u>S</u>	50. <u>2</u>	51. <u>04/10</u>	52. <u>1</u>	53. <u>2</u>	54. <u>02</u>
6th	55. <u>7</u>	56. <u>W</u>	57. <u>L</u>	58. <u>F</u>	59. <u>S</u>	60. <u>2</u>	61. <u>09</u>	62. <u>1</u>	63. <u>2</u>	64. <u>02</u>
7th	65. <u>7</u>	66. <u>F</u>	67. <u>L</u>	68. <u>C</u>	69. <u>O</u>	70. <u>1</u>	71. <u>45</u>	72. <u>1</u>	73. <u>2</u>	74. <u>00</u>
8th	75. <u>7</u>	76. <u>L</u>	77. <u>L</u>	78. <u>A</u>	79. <u>I</u>	80. <u>1</u>	81. <u>13</u>	82. <u>1</u>	83. <u>1</u>	84. <u>02</u>
9th	85. <u>  </u>	86. <u>  </u>	87. <u>  </u>	88. <u>  </u>	89. <u>  </u>	90. <u>  </u>	91. <u>  </u>	92. <u>  </u>	93. <u>  </u>	94. <u>  </u>
10th	95. <u>  </u>	96. <u>  </u>	97. <u>  </u>	98. <u>  </u>	99. <u>  </u>	100. <u>  </u>	101. <u>  </u>	102. <u>  </u>	103. <u>  </u>	104. <u>  </u>



AGE 49  
 SEX Male  
 WT. 185 lbs.  
 HT. 75"



## SOURCE OF INJURY DATA

### OFFICIAL

- (1) Autopsy records with or without hospital medical records
- (2) Hospital medical records other than emergency room (eg. discharge summary)
- (3) Emergency room records only (including associated X-rays or other lab reports)
- (4) Private physician, walk-in or emergency clinic

### UNOFFICIAL

- (5) Lay coroner report
- (6) E.M.S. personnel
- (7) Interviewee
- (8) Other source (specify): \_\_\_\_\_
- (9) Police

## INJURY SOURCE

### FRONT

- (01) Windshield
- (02) Mirror
- (03) Sunvisor
- (04) Steering wheel rim
- (05) Steering wheel hub/spoke
- (06) Steering wheel (combination of codes 04 and 05)
- (07) Steering column, transmission selector lever, other attachment
- (08) Add-on equipment (e.g., CB, tape deck, air conditioner)
- (09) Left instrument panel and below
- (10) Center instrument panel and below
- (11) Right instrument panel and below
- (12) Glove compartment door
- (13) Knee bolster
- (14) Windshield including one or more of the following: front header, A-pillar, instrument panel, mirror, or steering assembly (driver side only)
- (15) Windshield including one or more of the following: front header, A-pillar, instrument panel, or mirror (passenger side only)
- (16) Other front object (specify): \_\_\_\_\_

### LEFT SIDE

- (20) Left side interior surface, excluding hardware or armrests
- (21) Left side hardware or armrest
- (22) Left A pillar
- (23) Left B pillar
- (24) Other left pillar (specify): \_\_\_\_\_
- (25) Left side window glass or frame

- (26) Left side window glass including one or more of the following: frame, window sill, A-pillar, B-pillar, or roof side rail
- (27) Other left side object (specify): \_\_\_\_\_

### RIGHT SIDE

- (30) Right side interior surface, excluding hardware or armrests
- (31) Right side hardware or armrest
- (32) Right A pillar
- (33) Right B pillar
- (34) Other right pillar (specify): \_\_\_\_\_
- (35) Right side window glass or frame
- (36) Right side window glass including one or more of the following: frame, window sill, A-pillar, B-pillar, roof side rail
- (37) Other right side object (specify): \_\_\_\_\_

### INTERIOR

- (40) Seat, back support
- (41) Belt restraint webbing/buckle
- (42) Belt restraint B-pillar attachment point
- (43) Other restraint system component (specify): \_\_\_\_\_
- (44) Head restraint system
- (45) Air bag
- (46) Other occupants (specify): \_\_\_\_\_
- (47) Interior loose objects
- (48) Child safety seat (specify): \_\_\_\_\_
- (49) Other interior object (specify): \_\_\_\_\_

### ROOF

- (50) Front header
- (51) Rear header
- (52) Roof left side rail
- (53) Roof right side rail
- (54) Roof or convertible top

### FLOOR

- (56) Floor including toe pan
- (57) Floor or console mounted transmission lever, including console
- (58) Parking brake handle
- (59) Foot controls including parking brake

### REAR

- (60) Backlight (rear window)
- (61) Backlight storage rack, door, etc.
- (62) Other rear object (specify): \_\_\_\_\_

### EXTERIOR OF OCCUPANT'S VEHICLE

- (65) Hood
- (66) Outside hardware (e.g., outside mirror, antenna)
- (67) Other exterior surface or tires (specify): \_\_\_\_\_
- (68) Unknown exterior objects

### EXTERIOR OF OTHER MOTOR VEHICLE

- (70) Front bumper
- (71) Hood edge
- (72) Other front of vehicle (specify): \_\_\_\_\_

- (73) Hood
- (74) Hood ornament
- (75) Windshield, roof rail, A-pillar
- (76) Side surface
- (77) Side mirrors
- (78) Other side protrusions (specify): \_\_\_\_\_

- (79) Rear surface
- (80) Undercarriage
- (81) Tires and wheels
- (82) Other exterior of other motor vehicle (specify): \_\_\_\_\_

- (83) Unknown exterior of other motor vehicle

### OTHER VEHICLE OR OBJECT IN THE ENVIRONMENT

- (84) Ground
- (85) Other vehicle or object (specify): \_\_\_\_\_

- (86) Unknown vehicle or object

### NONCONTACT INJURY

- (90) Fire in vehicle
- (91) Flying glass
- (92) Other noncontact injury source (specify): \_\_\_\_\_

- (97) Injured, unknown source

## INJURY SOURCE CONFIDENCE LEVEL

- (1) Certain
- (2) Probable
- (3) Possible
- (9) Unknown

## DIRECT/INDIRECT INJURY

- (1) Direct contact injury
- (2) Indirect contact injury
- (3) Noncontact injury
- (7) Injured, unknown source

## OCCUPANT INJURY CLASSIFICATION

### O.I.C. Body Region

- (M) Abdomen
- (Q) Ankle-foot
- (A) Arm (upper)
- (B) Back-thoracolumbar spine
- (C) Chest
- (E) Elbow
- (F) Face
- (R) Forearm
- (H) Head-skull
- (U) Injured, unknown region
- (K) Knee
- (L) Leg (lower)
- (Y) Lower limb(s) (whole or unknown part)
- (N) Neck-cervical spine
- (P) Pelvic-hip
- (S) Shoulder
- (T) Thigh
- (X) Upper limb(s) (whole or unknown part)
- (O) Whole body

### (W) Wrist-hand

#### Aspect of Injury

- (A) Anterior-front
- (B) Bilateral (rib fracture only)
- (C) Central
- (I) Inferior-lower
- (U) Injured, unknown aspect
- (L) Left
- (P) Posterior-back
- (R) Right
- (S) Superior-upper
- (W) Whole region

#### Lesion

- (A) Abrasion
- (M) Amputation
- (V) Avulsion
- (B) Burn
- (K) Concussion
- (C) Contusion
- (N) Crush

### (G) Detachment, separation

- (D) Dislocation
- (F) Fracture
- (Z) Fracture and dislocation
- (U) Injured, unknown lesion
- (L) Laceration
- (O) Other
- (P) Perforation, puncture
- (R) Rupture
- (S) Sprain
- (T) Strain
- (E) Total severance, transection

#### System/Organ

- (W) All systems in region
- (A) Arteries-veins
- (B) Brain
- (D) Digestive
- (E) Ears
- (O) Eye
- (H) Heart
- (U) Injured, unknown system

### (I) Integumentary

- (J) Joints
- (K) Kidneys
- (L) Liver
- (M) Muscles
- (N) Nervous system
- (P) Pulmonary-lungs
- (R) Respiratory
- (S) Skeletal
- (C) Spinal cord
- (Q) Spleen
- (T) Thyroid, other endocrine gland
- (G) Urogenital
- (V) Vertebral

#### Abbreviated Injury Scale

- (1) Minor injury
- (2) Moderate injury
- (3) Serious injury
- (4) Severe injury
- (5) Critical injury
- (6) Maximum (untreatable)
- (7) Injured, unknown severity